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Emerging Strategies and Structures for Educational Change

PROCEEDINGS OF
THE ANNIVERSARY INVITATIONAL
CONFERENCE JUNE 12 - 15, 1966
THE ONTARIO INSTITUTE
FOR STUDIES IN EDUCATION

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PUBLICATIONS SERIES NO. 2
THE ONTARIO INSTITUTE FOR STUDIES IN EDUCATION

THE ONTARIO INSTITUTE FOR STUDIES IN EDUCATION

DR. R. W. B. JACKSON, *Director*

THE ONTARIO INSTITUTE FOR STUDIES IN EDUCATION is a college chartered by an Act of the Ontario Legislature in June, 1965. Its purpose is to study matters and problems relating to education; to disseminate the results of and assist in the implementation of the findings of educational studies; and to expand graduate instruction in education. The Institute is affiliated with the University of Toronto for degree-granting purposes.

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Foreword

On June 12 - 15, 1966 The Ontario Institute for Studies in Education convened a three-day conference on "Emerging Strategies and Structures for Educational Change." Our intention was to stimulate Canadian thinking on the need for an over-all plan for educational change and the further need to create special structures to execute this plan.

The conference was called on the first anniversary of the establishment of The Ontario Institute for Studies in Education, a body which is intended to undertake a far-reaching program of educational planning, basic research into educational processes, design of new curricula and teaching techniques, and systematic implementation. While Ontario had taken the lead with the establishment of its Institute in 1965, pressure had been growing for similar developments in other provinces, so that the time seemed appropriate to convene a national conference to look at new ideas and developments in this field. It was felt that the group which should be involved in this kind of discussion comprised the senior decision-makers in the provincial departments of education, representatives of parents', teachers', and trustees' organizations, and selected research personnel from faculties of education and research agencies.

The conference began with a general examination of the need for educational change, the nature of the resistance to change, and the notion of a "strategy for change." It then examined in greater detail some of the plans and structures for change which have emerged in the United States, Britain, Quebec, and Ontario. The program also provided an opportunity for small groups to discuss the roles which individual bodies would play in educational change and problems associated with change.

There is no way of determining the impact our conference has had or will have in stimulating our provinces to reappraise their planning, research, development, and implementation needs in education. However, interest seemed to be maintained at a high level throughout the conference, and we believe that much useful information was disseminated.

F. G. ROBINSON
Conference Chairman

Toronto, Ontario
September, 1966

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THE HONOURABLE WILLIAM G. DAVIS
Minister of Education, Province of Ontario

Address of Welcome

It is a pleasure to welcome you here tonight on behalf of the government of our Province, and also officially to declare open this first Anniversary Invitational Conference sponsored by The Ontario Institute for Studies in Education. I am honoured to have been asked to do so. I am greatly impressed by the presence of so many distinguished educators, not only from our own Province, but from all parts of Canada and from several countries beyond our borders. You represent, too, not only the world of education today, but, to a degree, you foreshadow the schools of tomorrow: I was warned that you have been selected as representative of the leaders who are studying this world of change and planning for the future. I am aware also that the future of all our children is to some extent in your hands, so I may be forgiven if I ask that you advance progressively yet with some degree of conservatism!

It was almost one year ago that the Act establishing this Institute received Third Reading and Royal Assent; for an infant of such tender years it displays amazing vigour and achievement. I congratulate the Board of Governors and through you, Mr. Director, the staff of the new Institute. Few infants in the history of mankind can boast that within their first year they selected a residence, and then immediately laid plans for the building of a new home, perhaps to be occupied even before they have reached the age of compulsory school attendance. As for your good works, it was my privilege to read to the House recently a preliminary report on your activities to date — in research studies, in revision of the courses of graduate instruction, and — through adoption, I presume — in curriculum development. Our government acted with some courage last year in fashioning this new body, as you will realize, since it had no counterpart elsewhere in the world. So far, at least, we have been successful; and the returns for the future promise to be even greater. I am well satisfied and content; indeed, I am confident that under the wise leadership of your Board and Director, we are well and truly launched into a new era of sound and imaginative development in education in our Province.

It is highly significant that the subtitle of this first Anniversary Invitational Conference should focus attention on "strategies for change." As some of you may know, two of the functions assigned to the new Institute are to disseminate the results of studies and to assist in the implementation of all findings in our school system. In framing the terms of the Act, we were — as laymen— probably even more keenly aware than were the professional researchers of the incredible length of the time lag between innovation and implementation in education, which some have set at fifty years. We were equally aware of the vast body of findings and theories which have never succeeded in reaching the sound-proofed doors of the traditional classroom. In any event, the Institute has clearly recognized this major problem of the gap between theory and practice, or between innovation and implementation, and has deliberately sought for answers through the medium of this conference, calling for ideas and experiences from diverse sources. I am told, by the way, that I should use the terms "hypotheses" or "theories" in this context. I trust that your goal will be reached; a study of the program of the next three days indicates that you undoubtedly are setting out on the right path.

I have already given you some indication of the plans and expectations of our government in regard to the Institute, but perhaps those from our own Province will forgive me if, for the benefit of those from other jurisdictions, I review briefly our position.

We recognized that our people were caught up in a new and bewildering world characterized primarily by rapid and continuing change — in the home, at work, and in the new hours of leisure. We also recognized that in this new world of science and technology, of automation and computerization, we had to choose either to drift with the tide of change at the risk of great damage, or to master the process of change and learn to control the new instruments, so that we might move ahead purposefully toward our traditional goals. Not only did we choose the latter alternative, but we drew up plans which would help guarantee success. In all the planning, education was clearly recognized as being the most significant sector. It represented an investment in human resources without which we would surely fail to reach our goals. And in education itself, as we looked at what is and what had been, and peered ahead to see what might be and should be, it was obvious that we must deliberately organize for continuing change and provide a very substantial basis for research and development within education itself.

That, briefly, is the genesis of The Ontario Institute for Studies in Education — an agency for research and development in education. To ensure that freedom without which innovation and research cannot flower, we set up this Institute as a college in its own right and established the Board of Governors as an independent corporation. To ensure that the work which must be done could in fact be financed adequately, we have accepted major responsibility for providing funds from the public purse. To ensure the existence of a real link between the Institute and the field, a "two-way communication system" in the jargon of today, we fashioned a Board representative of all major interests in education — teachers, trustees, administrators, universities, government, and citizens.

We have placed our confidence in you and your colleagues, Mr. Chairman of the Board, and have pledged our wholehearted support; the rest is up to you. I am confident that, long and arduous though the task may be, you will live up to our highest and fondest expectations.

EWALD B. NYQUIST
Deputy Commissioner of Education, New York State

Emerging Strategies and Structures for Educational Change in the United States

Dr. Jackson, the Director of The Ontario Institute for Studies in Education, wrote me some months ago and tempted me with the prospect of speaking to you this evening. You know what temptation is: It is something which a woman runs away from, but which a man crawls away from, slowly, hoping it will overtake him.

I replied to Dr. Jackson that much as I would like to do so, I simply would not have time at this point in the academic calendar. Dr. Jackson retorted that I reminded him of the rumor the Italian authorities were going to install a clock on the Leaning Tower of Pisa, for they say, "What's the good of having the inclination if you don't have the time?"

Seriously, Dr. Jackson suggested that he wanted me to come because he had heard that we had so much in common. What he meant, I take it, is that we both have a happy facility for making a problem out of every solution. We both make compromises for a living. Both of us have to live verbally beyond our intellectual means. Each of us has the reputation of having the most brilliant mind in his respective institution — until he makes it up. We both have a marked ability to meet every issue with an open mouth. Because both of us are in charge of a budget-making process, we have a marked capacity to spread, uniformly and with fine malice, dissatisfaction throughout an entire institution. And, finally, Dr. Jackson remarked that I was going to be introduced by the Ontario Minister of Education and he wanted someone who performed a similar function. You should know, ladies and gentlemen, that a clergyman and a deputy commissioner stand at opposite poles in purpose. A clergyman exists to fulfill the Biblical function of comforting the afflicted; the deputy commissioner's ultimate job, like that of a Minister of Education, is to afflict the comfortable.

I have spoken so much about innovation and the acceleration of educational change that I feel a close kinship with the Columbia University psychologist who overheard one day a conversation among the white mice in his experimental laboratory. The smartest and plumpest of the mice was boasting:

"I've got this fellow so conditioned that all I have to do is press a button and he feeds me."

When Dr. Jackson pressed my button for this speech, I experienced the same conditioned reflex of acceptance that the phrase "educational change" has always stirred in me.

It has been suggested that I speak to you on the strategies and structures for educational change now emerging in the State of New York. Please do not misinterpret my remaining remarks. In what I have to say, there is no disparagement or comparative criticism of other countries.

James Thurber, my favorite humorist, once replied, in answer to the question, "How's your wife?" by asking in turn, "Compared to what?" So let me tell you what we are doing in New York and throughout the nation.

The Need for Change and for Faith in Flux

We must give due credit to the Russians for provoking the American educational establishment to accelerate the rate of educational change. We remember well the post-Sputnik era. To borrow a term inspired by nuclear physics (or as an untutored printer's devil once arranged it, "unclear physics"), "the pile went critical." The world has never before witnessed such a noisy, unhinged binge of self-criticism. The American people, in typical fashion, in projecting the blame on our schools and colleges for our second-best position in science and technology, were in reality blaming themselves. Financial support for education had not been generous enough, and the realization was just beginning to dawn that education, indeed, is the indispensable element in advancing private benefit and the public welfare — and it wasn't good enough.

How painful it was to learn that the whole concept of a democratic society rests upon a people educated to the utmost of their abilities. How long it took us to learn, as de Tocqueville predicted, that the crucial test for American democracy would be in the development of the superior individual. Criticism is the engine of change.

America had long since accomplished the revolution of educational quantity which has only just begun in many other countries. The revolution in equality of educational opportunity had already been initiated and is still going on. The revolution in quality of education was about to start. (And in this connection, let me commend to you the editorial in the April issue of the British magazine *Nature*. It is superb.)

Educators in particular have not been the first to lead in initiating change or even to recognize the need for it, which is worse. It has sometimes seemed to me that in the United States, money is what university presidents, school superintendents, and school teachers talk about, while businessmen, admirals, and bankers talk about education.

Educators tend to be gyroscopic; they do not easily change direction. Some are like inverted Micawbers, waiting around for something to turn down. They never lift a finger toward originality. Some administrators know that their greatest administrative art is the ability "to insinuate" new ideas into their schools without being detected at it. Everybody is for progress, of course; it is only change they do not like. Professors, college presidents, teachers, and schoolmasters can be as much prisoners of practiced procedures as can any employee in a governmental office caught in the "viscous sludge of bureaucracy." A vast momentum of ancient custom persists in teaching methods, and faculties are especially noted for the enormous restraining force of their vested subject-matter interests when it comes to curricular change. Maybe you read the report of the British analyst of academic politics. His conclusion was that nothing should ever be done for the first time. Orthodoxy comes natural with many educators; heresy does not. And as Sir Eric Ashby has said: "Orthodoxy is celibate; it breeds no fresh ideas." We are reminded by Toynbee that rigid societies are the dead or dying societies. There are schools rusting in peace in a day when, as a famous philosopher has suggested, knowledge keeps no better than fish.

I am reminded of two aquatic analogues here: You cannot raise pearls in dead oysters. And any dead fish can float down the river; it takes a live one to swim upstream.

What we need desperately are educational innovators, educators who are neither scared by novelty nor bored with it, as Mark Van Doren once said. Maybe you heard of the two tigers who were walking down Madison Avenue in New York City. One says to the other: "Where you been? You smell like gasoline." In the United States at least, schools, colleges, and educational agencies need to smell like gasoline and as the Esso importunity has it, need to put a tiger in their tanks.

I am not urging constant and unbuttoned innovation simply for the sake of promoting change. I am advocating a greater practice than we are used to, of the virtue of extending generous hospitality to experimentation and of sparking and accommodating innovation.

I am reminded of two homely analogues concerning oak trees in emphasizing the need for boldness, creative service, and constructive change: First, there are two ways to get to the top of an oak tree — climb it or sit on an acorn. Secondly, remember that a mighty oak is just a little nut that held its ground.

American educators, by and large, have two opposite tendencies. The first is to resist change, to keep in the familiar academic groove. The second is at the opposite extreme, an exuberant boundlessness for full and immediate accommodation of any novel educational fad that comes along. Such educators are so open-minded that their brains fall out. Neither extreme is helpful. What is needed, besides a curiosity about doing things differently, and hopefully better, is disinterestedness, a willingness to suspend judgment, a penchant for critical examination, for these are the marks of a liberally educated person. The innovator, the agent of change, is the new peer group to which we must all aspire or be second-rate.

I should like to close this section of my remarks with two illustrative quotations. The first appeared in the July 17, 1965 issue of the *Saturday Review* and is from an article by Emanuel G. Mesthene, executive director of the Harvard University Program on Technology and Society:

> The challenge to education is indeed staggering. Teachers who have been brought up to cherish the stable must take the children of parents who have been brought up to cherish the stable, and try to teach them that the stable, the unchanging, is unreal, constraining, a false goal, and that they will survive in an age of change to the degree that they become familiar with change, feel comfortable with it, understand it, master and control it.

And finally, here is a quotation from a superb principal of a secondary school, Mr. Frank Brown, of the Melbourne, Florida, High School. It is no accident that his school, in this space age, is near our nation's launching pads:

> Experimentation must become so much a part of the educational enterprise that as soon as a school has a good thing going, it must begin planning to make it obsolete. We cannot start out to be experimental and let our new and exciting programs become fixed. When we do this, we cease being experimental and become hardened to the experiment. We must take care that promising new heresies do not become dull new orthodoxies. We must get used to being on the cutting edge. When you clutch your goal in your hand it is no good. It must always be just beyond reach.

There are fresh new breezes blowing through the corridors of our schools and colleges. As a California sociologist has remarked, tradition is something you did last year and would like to do again. Innovation is rapidly coming about in five major areas:

1. In educational theory, which suggests that learning is most effective when the student is discovering for himself principles, generalizations, basic ideas, and the fundamental structures of the various disciplines.
2. In the education of teachers.
3. In educational arrangements, in the mechanics of running the schools, such as non-graded schools, team teaching, educational television, changes in building design, programmed instruction.
4. In special education for the disadvantaged, by which I mean primarily the American Negro, for, as has been remarked by Professor Cremins of Columbia University, a universal system of education is tested at its margins.
5. And finally in curricular materials.

But schools and teachers cannot be changed by mere exhortation and the non-stop importunities of educators to be different. Structure and strategy are required.

Interlocking Complexity

Just as we live in a culture which is polarized around the scientific revolution and scientific method, so do we live in one which puts a premium on organization, on system, on cooperation between units having mutual interests. It is a day of "calculated interdependence," of involvement, of what I call planned togetherness, whether we like it or not. Have you noticed lately how little you can do by yourself any more? Our freedom, both personal and institutional, often consists merely of being able to choose on whom to be dependent.

Not enough educational leaders realize that they can no longer preside over institutions or school systems in splendid isolation, for up to now, at least, education has been a many-splintered thing. There is a bright future for complexity in education.

Our public schools and colleges are finding that they need to cooperate more, and not only with each other, in order to make education more effective. They must learn to establish constructive relationships with the national government; with private and parochial educational institutions; with private and public agencies in such fields as health, welfare, housing, and community planning; and with other educational resources within their communities or regions which have hitherto stood on the periphery of the formal teaching and learning process, such as museums, zoos, libraries, educational television, the performing arts.

And our schools and colleges are finding that the products of cooperation are something like the synergistic effect of Irish coffee: the two ingredients taken together are infinitely more satisfying than either one taken alone.

As an important recent report put it:

> The interlocking complexities of modern society are an inescapable part of our future. If we are to nourish individual freedom we shall have to nourish it under these circumstances. If we are to maintain individual creativity we shall have to learn to preserve it in a context of organization.

Whether enough of us are willing to subordinate our special vested subject matter and institutional interests to cooperative regional or national interests, remains to be seen.

As for my remaining remarks, let me make it clear at the outset that what is going on in New York is a complex total arrangement, all of it provided with support by the federal government, the state, local school systems, and public and private universities, all cooperating. Our total state effort in accomplishing innovation has the appearance of a marblecake, replete with several intertwining layers of cooperative effort aimed at the increase of quality and equality in educational opportunity.

Those engaged in this process of accelerating educational change are concerned with four needs:

1. The need to reduce the gap in time between the discovery of a good idea and when it is given practical effect in the field.
2. The elimination of duplication of, and unnecessary competition in, research effort.
3. The need to intensify research in the teaching and learning process and its administration.
4. The need to bring together related disciplines in coordinated research effort on the basis that today the best and newest ideas come from the interplay and friction between the various disciplines, from the interfaces where these subjects border on each other.

Key concepts in all of this are: the innovator, an agent of change; the institutionalization of change; the engineering of consent; the management of innovation; and bringing about a favorable ecology for research and experimentation.

Emerging Patterns of Change

Now I shall follow closely the theme of your conference and talk about the "Emerging Strategies and Structures for Educational Change," at least as they are emerging in the United States. I will, however, take the liberty of reversing the order and talk first of structures.

This is not a complete switch since one of the major strategies is the development of structures for change. This has come about because we have realized that in a world of continuous change, change to be controlled must be institutionalized; that is, there must be in each major system today a segment that takes thought for tomorrow, that sees to it that needs are anticipated and prepared for.

I should further note by way of preamble that the new structures are coming into being as a consequence of another major strategy, which is to use dollars to get change — and I don't mean the metallic kind. The private philanthropic foundations, such as Ford, Carnegie, and Rockefeller, have led the way and now our federal government is outdoing all the foundations put together in pouring funds into education in order to induce the maximum possible change. It is no accident that our Secretary of Health, Education and Welfare was a foundation president.

At the state level we too have been following a similar strategy. Since 1958 we have had an Experimental Programs Fund with which we have supported research and experimental projects initiated by local school districts. One-half million dollars a year is appropriated for this purpose (and we are trying to get the principle established that 1 per cent of state aid to schools should be set aside for research and innovation). The districts are required to match state funds. Thus for a relatively small amount of money, we have developed a number of good ideas. This year our authorization was extended so that we can carry projects from the research phase into demonstration and dissemination.

Structures for Change

Let me then describe the structures for change that are emerging as a result of the funding provided by the Federal Elementary and Secondary Education Act of 1965, or "Easy" as it is familiarly known (in conversation, not in giving it practical effect).

This act is based on the proposition that there should be a continuum of institutions and functions from basic research to practice. The points on this continuum can be identified as:

1. Basic research whose objective is knowledge.
2. Applied research — the discovery of solutions to problems arising in practice, using in part, at least, results of basic research.

3. Development — the engineering and testing of the solutions for application in practice.

4. Dissemination — the demonstration that the solution works in normal settings and the dispersion of information about the solution.

5. Adoption — the training of personnel to use the solution, and the institutional changes, including budgeting, needed to make the practice a part of regular operations.

What has been discovered is that few individuals and even fewer institutions span the entire continuum; that some parts of it, especially in the development-dissemination segment, have been largely neglected, and that none has really been adequately supported. The purpose of the Federal Act is to correct these deficiencies.

Structures Supported by the Federal Act

Title IV of the Act provides funds — $70 million, in the fiscal year ending June 30, 1966 nationally, and $80 million requested for the fiscal year ending June 30, 1967 — for the research and development end of the continuum. Some of these funds are being used to support *individual research projects* in universities, state education departments, and school districts. Some are supporting *Research and Development Centers* (R & D) at single universities that provide more concentrated focus on specific problems; for example, the University of Oregon Center is studying educational administration; Stanford University, teacher behavior; Pittsburgh, instructional strategies; and Harvard, educational differences. There are now nine R & D centres in operation.

Then, to establish still larger concentrations of effort on problems, the Act provides for the creation of *Regional Educational Laboratories*. The Laboratories will be specially constructed facilities run cooperatively by groups of universities, local school districts, state education departments, and other agencies, or they will sometimes be simply an association of such agencies and institutions working on innovation projects. They cover fairly large territories. With large funds, expert staffs, and ample facilities, they will be able to carry on experimentation on a level commensurate with the complexity of the problems of education. According to the U.S. Office of Education guidelines, the Laboratories will:

> conduct a wide range of research, development, and dissemination programs including basic and applied research, curriculum development and evaluation, development of promising innovations, demonstrations of noteworthy programs and practices, training and dissemination activities, research information centers, and consultation services to assist schools in the implementation of educational improvements developed through research. A communication network is expected to enable the laboratories to complement and supplement each other.
>
> Diversity of program is intended and expected in order that laboratories will respond in different ways to research needs and to the educational characteristics of the regions in which they are established and to the nation as a whole.

In their basic research role, the Laboratories will advance fundamental knowledge in such areas as perception, memory, learning, socialization, emotional development, social organization, interpersonal relations, etc. In this role, they will primarily be enlarging on the activities that have long been carried on by individual researchers in universities and elsewhere. There are now seventeen such Laboratories being formed throughout the country.

It is in their developmental roles that they will be breaking new ground in American education. In the past, much of the educational research that was done was never translated into practice, and, conversely, most educational practice had little foundation in basic research. It is hard to find among the major educational changes of the last fifty years any that were based on sound research. From controlled vocabularies for beginning reading to school district consolidation, the research evidence for practices that have affected the lives of thousands of children have been based either on non-existent, ambiguous, or downright erroneous research.

What has been needed and what has been largely lacking in education is the middleman between the researcher and the practitioner — the counterpart of the agricultural scientist or the industrial engineer. The task of the engineer is to take the practitioner's problems and design practical solutions for them, drawing as fully as he can both on knowledge developed by basic research and the results of tested experience.

The staffs of the new Educational Laboratories will begin to fulfill this function for education. They will be drawn from many disciplines and varied backgrounds — psychologists, sociologists, economists, school administrators, teachers, writers, statisticians, and a whole range of technical and supporting personnel.

Their task will be to translate research results into practical educational programs (instructional systems, curriculum materials, administrative practices, etc.); to try these out in experimental situations, revising as necessary until an approach is ready for extensive field trial. Then, still under Laboratory direction, field trials will be conducted, modifications made, and results carefully evaluated. Only then will the program be made available for widespread adoption.

At this point, another new structure created by the Act will come into function, the *Supplementary Educational Centers* whose funds come from Title III of the Federal Act — $75 million in the first year, $150 million in the next, and going as high perhaps in a few years as $4 billion. Basically, these Centers are cooperating regional groups of school systems aided by local universities and other educational agencies. Although they serve many functions, one of the key ones will be to provide a link between the sources of new ideas on the one hand and the schools on the other. Through in-service programs, demonstrations, and other means, they will spread new practices to schools in their regions and feed back to the development Laboratories both problems that emerge in the course of introducing new ideas and those that are identified at the local level as needing attention.

Some members of the staff of a Supplementary Center will work with the

Regional Educational Laboratory in the final stages of development of an idea. They will thus be ready to train others in the new practice. Some of those to be trained will be other regular members of the Center staff, some will be teachers in the schools served by the Center.

These people in turn will help in the introduction of the new practice either through workshops at the Center or in the schools and classrooms where the idea is to be adopted. Extensive use will be made of videotapes, films, programmed materials, workbooks and other instructional aids, both in the preparation of the teachers and for use by the pupils. With these aids teachers will not only be told about a new practice or set of curricular materials; they will see them in use by able teachers; they will have a chance to try them out under guidance and, by means of low-cost videotape, they will be able to view and correct their own performance.

If materials developed outside the school system do not quite fit a local need, staff of the Center will be able to assist the local teachers in making the necessary adaptations. Additional materials can be written and rapidly reproduced; slides, transparencies, tapes, filmstrips, films, and other instructional materials can be produced to the teacher's specifications by the technical staff of the Center.

I should note in passing that in seeking models for these Centers we found many stimulating ideas in the Toronto Education Centre Library. Our librarians still cannot believe that supplying Xerox copies of all journal articles needed by a student is desirable, but our Xerox Corporation loves you for it.

When the Centers are fully in operation, the teacher will no longer be primarily dependent in the classroom on what she herself can locate or produce for her class. She will have behind her the full resources of the Center, to be deployed as she dictates. Even this link between teacher and Center will not be left to chance or depend solely on the initiative of the teacher. As the last link in the innovation chain, each school will have one or more teachers who will be given the responsibility of liaison with the Supplementary Center and other sources of new ideas and practices. Relieved from some of their regular teaching assignments, they will spend time working in the Center with the Center staff. They will monitor the adoption process, alerting Center staff to problems as they arise, and being available as a resource to their colleagues. Their primary task will be to oversee the planning for the effective, smooth incorporation of new ideas into existing arrangements.

The system as described thus far suggests a one-way flow of new ideas from Research Centers through the Supplementary Centers to the schools. Good ideas, however, do come from teachers and administrators, and the system will encourage more rapid spread of these ideas than now occurs. Local change agents will bring good ideas from their colleagues to the attention of the Supplementary Centers, from which they can be more readily spread to other schools and passed along to the Laboratories for incorporation into their programs of research and development.

Information Dissemination

Insuring a smooth flow of information among all of these elements will be a major problem. As one channel of dissemination, the U.S. Office of Education has established the *Education Research Information Center* (ERIC). When this is fully in operation, it should be possible for researchers to find out the status of research on any problem, and for practitioners seeking solutions to problems both to probe the research for the keys to answers and to identify ongoing programs that may be demonstrating the answer.

Merely making a vast array of information more accessible will of course not be sufficient, but an effective information system can go a long way in reducing wasteful duplication of effort and insuring that research and practice in mutual interaction build to ever higher levels of excellence.

Project ERIC is designed to establish informational clearinghouses and research documentation centers in specific programs such as vocational education, foreign languages, and other areas dealing with educational research, with each center specializing in one specific area. Such centers are now operating at Harvard, the City University of New York (preparation of urban school personnel), and Ohio State University. An additional ten clearinghouses will be established by the end of this month.

As this system emerges, the whole process of educational innovation will become systematic and continuous. New ideas from the entire gamut of research and experience will be systematically mined for relevance to educational practice. Translation into practice will occur under the direction of specialists; each new practice will be carefully evaluated for its effectiveness and only disseminated when effectiveness has been reasonably demonstrated. The schools and their staffs will be increasingly receptive to change and far more sophisticated about the value of any proposed change. Thus will change be institutionalized in education as it has been in agriculture, medicine, and industry.

New York's Developments

In New York, we have one *Research and Development Center,* located in New York City. It is really an incorporated consortium of the leading universities there, concentrating on the problems of large cities. It is funded at the multi-million dollar level. A central staff coordinates the entire effort and performs some research and development work on its own; other problems or studies are farmed out to the institutions composing the consortium. This R & D Center will shortly be converted into a Regional Educational Laboratory.

The rest of the State will be covered by another *Regional Educational Laboratory* just now being formed, called ERIE, the acronym for Eastern Regional Institute for Education. The territory included is all of New York State except New York City, and western and northern Pennsylvania. Universities in Buffalo, Rochester, Syracuse, and Albany, Cornell University, and the University of Pittsburgh, public and private school systems, and the State Education Department will be legally incorporated partners in a vast innovative venture.

Nearly the entire State will soon be covered by *Supplementary Educational Centers* operated by public school systems in cooperation with local higher institutions and other educational agencies, according to a carefully drawn State plan.

Strategies for Change

As I said earlier, these emerging structures are themselves a major strategy for change. Their intrusion will force all institutions to look at themselves, old people will fill new roles, and new people will be drawn into education. A dynamic climate will be created in which creative people thrive and productive ideas flourish.

In addition to this strategy of structures, there are a number of more limited strategies that are being increasingly used. (For several of the items in the list that is to follow, I am indebted to a speech by Edward J. Meade, Jr., of the Ford Foundation, given last April at the New Jersey Governor's Conference on Education.)

1. The *pilot project* is an increasingly popular strategy, perhaps because it makes it possible to introduce a small amount of change without really changing the existing order. On this point Meade makes an observation that is worth consideration: What would happen, he asks, if we were to shift the onus for change to the existing system, requiring it to adjust to the project, thereby assuring a fair chance for testing a program or idea? Pilot projects are too often victimized by the compromises and concessions which they must make to the orthodox way of doing things, with the result that they are never really tested.

Pilot projects can be useful to try out an idea, but they are not a fully adequate strategy by themselves. John Kenneth Galbraith once remarked that pilot projects are simply a way of simulating action without spending much money. They can be compared to the warrior statues in Washington, D.C.: the posture is heroic; the sword is held high, but, alas, the movement is nil.

2. Closely allied to the pilot project is the *demonstration project*. As someone has facetiously said, a pilot project is a project funded for one year, a demonstration project has two-year funding.

Actually, as we have come to conceive it, a demonstration is the conduct of an innovation in a setting and under conditions so similar to that of potential adopters, that many of the excuses for non-adoption are removed. The demonstration should use regular teachers and facilities and not be budgeted out of line with other comparable programs.

We hope to develop techniques for improving the demonstration project's effectiveness as a dissemination device; for example, by supporting staff who will "program" visitors so that they gain as much as possible from a brief visit. Arrangements will also be made so that visits can occur with a minimum of interference with the normal operation of the program.

3. The *cadre approach* is a third strategy. This involves the training of a team of "change agents" in a system, the team often including teachers and administrators. This approach evolved from the experience we had with some of our early in-service institutes. We sent individual teachers from schools to summer institutes where they got lots of new ideas. But when they got back home, they were all alone. The administrator often did not understand the need for change, and the teacher had no others from whom she could gain support. The team approach seeks to overcome these deficiencies.

An extensive project involving several universities and many school systems is now underway to refine the techniques for team action and to learn how better to train change agents (the Cooperative Project for Educational Development — COPED.)

4. A related approach is to introduce a *change agent* from outside the system who can act as a catalyst for change in the system. With some of our ESEA Title III funds we are going to create a catalyst position in a part of New York City. The change agent, appointed for a limited period, will spend time in the schools, observing in classrooms and meeting with teachers. When he finds a teacher with a good idea that needs a little nurture to develop, he will have funds to enable her to take some time off to work up the idea, or to buy the equipment or materials she needs, or to visit another school or attend a workshop.

5. A fourth strategy is the *experimental subsystem*, in which an entire segment of a large school system becomes the target for a complex of interrelated changes. One example would be the creation of a so-called educational park or complex in which elementary and secondary schools are clustered together on a single site and share many facilities. The best actual examples are the many experimental colleges set up within larger institutions. This strategy is still largely in the talking stage, but it may offer possibilities for attacking some of the problems of large city school systems.

6. Still another institution-oriented approach is the development of *innovation centers* within a larger unit. We have such a center in our own Department. Its sole specialty is a brokering of ideas. Hence, its main function is to create a perpetual state of surprise. (Some of us have developed a high threshold for it.) It is designed to afflict the comfortable, internally as well as in the schools. Its purpose is to accelerate education change on a statewide basis in order to raise the quality of education, evaluation, and dissemination of new ideas and practices. It welcomes fresh ideas, encourages the trying out of new approaches in schools and colleges, evaluates the results and passes these along to schools throughout the state. Some individual schools are organizing similar local centers, and the R & D Center at the University of Wisconsin is designing research and development units to be a part of the organization of individual schools.

7. Another strategy might be called the *thing approach*. This is the strategy that seeks change through facilities, equipment, and instructional materials. A new school building designed for smaller or larger classes than before will force a great many changes on a staff. The introduction of film projectors or language laboratories can produce change in teacher behavior, but without a great deal of supporting change this approach is likely to have quite transitory effects.

Change through materials is one that has many adherents. Advocates of this strategy stress the very large part that textbooks and other teaching materials have in shaping teacher behavior. The many recent curriculum reforms, especially in the sciences, have had a heavy materials orientation, although they have also relied on in-service work to help prepare teachers to use the new curricula.

8. *Seeking and Supplying Information* is another strategy or at least an element in a strategy. Merely to ask schools for information that they had not been accustomed to collecting, or asking for it in a new way can produce a lot of change. We saw this when we asked a few years ago for a racial census of our schools, or when we recently changed fiscal accounting to a double-entry bookkeeping system.

When the information collected is comprehensive and when it is reported back to the schools, to the community, and to other agencies in meaningful ways, it can become a powerful tool for managing change. Both through our own efforts in New York and in cooperation with the U.S. Office of Education we are developing a Basic Educational Data System (BEDS) that we hope will give us that tool.

9. In the preceding list I have tried to set before you a liberal selection of the varied strategies that are being employed today in the effort to raise the quality of education. Each strategy has its strengths and its weaknesses. There is a more generalized strategy that seeks to combine the strengths of all others and minimize the weaknesses. This is the *systems approach*.

It is based on the premise that education is a complex of closely interrelated activities. A change in any one part of the system, therefore, has ramifications in others. No change can be fully effective that does not take into account the effects throughout the system, and changes which are designed to take the system into account are likely to be more successful and enduring — or so the theory states.

As some of our more restricted strategies begin to reveal their limitations in helping cope with the complexities of our problems, we are going to hear more about the systems approach.

10. The last in my list of strategies is not one that we educators invented or even advocate, but is one that has been responsible for a great amount of change in our educational practices in recent years. I am referring to the strategy of *protest, demonstration, and boycott*. This is not the way we, as upholders of the rational order of things, would like to see change come, but when institutions become as unresponsive to major needs as most of our schools did to the needs of the disadvantaged, the cry in the streets may be necessary to remind us whom we serve.

The civil rights movement has brought home to many of us the lesson that if we are not again to be caught unprepared for the sweep of great historic events, we had best prepare ourselves with the structures and strategies for keeping pace with a changing world.

While you in Canada do not have the force of our civil rights movement to drive you along, there are other forces, I am sure, that are equally as powerful.

Two Necessary Provisions

I would highlight two very necessary provisions in rounding out any circle of felicities in accelerating educational change.

The first is ample funds and arrangements for keeping teachers up-to-date in their fields of knowledge and with new teaching techniques. In a more stable day, when knowledge and teaching methods did not change at the pace characteristic of them today, keeping up in one's own field of knowledge was considered an individual professional responsibility. It still is, in other professions, but no longer to the same degree in teaching. Now, because education is considered an investment and not a cost, and because education has a first priority in the achievement of state and national goals, responsibility for keeping teachers abreast of current knowledge has shifted from the individual teacher to larger units of government representing society's interests in good education.

Secondly, in order to accelerate educational change, ample funds must be provided in order to enable administrators in decision-making positions to travel. No school or institution or government unit has all the new ideas, and sometimes it helps to see something work first-hand. Professional competence can be improved by making it possible for employees to travel to outstanding educational innovations in operation in other parts of the country or abroad, to stay at these locations for extended periods, and to study what goes on there on an intensive basis.

Conclusion

In conclusion, let me remind you that in these perilous times neither structures nor strategies by themselves will suffice. Giving life to the structures and direction to the strategies must be good men, dedicated to the best ideals of our tradition, with vision for the future and the courage to change when all the forces of prudence counsel delay.

We are in an era, as someone has said, where the "tidal wave of change threatens the cherished orthodoxy, the sacred traditions, and the ancient assumptions of education." I think perhaps the greatest insight anyone can gain today is the understanding that we must learn to live with ambiguity, conflict, and tension as facts of life. The President of Syracuse University has said, "The liberated man lives between commitment and allegiance on the one hand, and curiosity and readiness to change on the other."

Recognition of this polarity of tensions and of the need for maintaining stability and preserving continuity in the midst of constant change: this is the trenchant insight which will help us rise to the challenge now presented to education in all its aspects.

We do not precisely know where the future lies but we know that we have to plan for it. We have to gear up with frenetic haste to accommodate rapid change; but we need time for reflection. We need to change to progress, but sometimes we need to resist change by bearing courageous witness to the virtue of what we already have. We must recognize those times when we must rather fight than switch. Let us not, like Victor Borge's uncle, find cures for things which have no diseases, and then die from one of the cures.

May I remind you of an anecdote from the epilogue in a contemporary novel, *Captain Newman, M.D.*:

> Destiny came down to an island, centuries ago, and summoned three of the inhabitants before him. 'What would you do,' Destiny asked, 'if I told you that tomorrow this island will be completely inundated by an immense tidal wave?' The first man, who was a cynic, said, 'Why, I would eat, drink, carouse, and make love all night long!' The second man, who was a mystic, said, 'I would go to the sacred groves with my loved ones and make sacrifices to the gods and pray without ceasing.' And the third man, who loved reason, thought for a while, confused and troubled, and said, 'Why, I would assemble our wisest men and begin at once to study how to live under water.'

I should like to end on a light note by telling you a favorite story. If I have, now and then, seemed to diminish everyone in the educational community, why then I think it is healthful for us to engage in the kind of deflating that occurred when two boyhood competitors met after a long separation. As classmates, they had fought hard to outshine each other in everything, and, as they moved from success to success, each had kept the other's head from getting too large by periodically putting him in his place.

After graduation, they went their separate ways. Each flourished in his chosen field, one becoming a slender and model senior admiral, the other a ranking bishop, now grown paunchy with the prolapsed belly of the old. One day the bishop, in colorful ecclesiastical costume, saw the admiral, in resplendent military uniform, across the concourse of Grand Central Station in New York City. The bishop walked over, tapped the admiral on the shoulder, and said, "Pardon me, conductor, can you tell me when the next train leaves for Boston?"

The admiral turned, looked the bishop up and down, and parried with an equally ungracious riposte: "Madam, in your condition you shouldn't be traveling."

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Rational Strategies for Educational Change

The title of my paper is far from being a publicity man's dream. But it does have the virtue of containing two or three terms that provide a challenge for the thoughtful observer of human affairs. I shall refer back to these from time to time as my theme unfolds.

Affective Connotations of the Term "Change"

We all know what change is, do we not? Even our physician shares the common concept, despite his talk about "changes" in our arteries when he means that they are clogging up and threatening an imminent coronary thrombosis or cardiac infarction that will kill us no less effectively, although perhaps in a more civilized and scientific manner, than a plain old-fashioned heart attack. Obviously, he feels that "change" has less depressing associations than "deterioration." No doubt we owe him some appreciation for his desire to spare our feelings, if not for his confidence in our ability to come to terms with reality.

Despite the physician's substitution of "change" for a term with more heavily negative and emotionally alarming associations, it is not a neutral word. Its use produces emotional reactions. In some circles, and under many circumstances, these are favourable. It is considered a mark of approbation to be considered able to adapt to changing times. "He hasn't changed a bit!" can be given an extremely derogatory twist, implying that he is stubborn, atavistic, and probably stupid.

On the other hand, many people feel threatened at the thought of change. They react unfavourably to the idea that others may wish to change them, and in consequence they feel apologetic about assuming a responsibility for changing others. They reach for words like "education," "treatment," "therapy," "guidance," and the like, which have more positive connotations. To the insecure personality, the need to change implies some kind of inadequacy, the recognition of which may be painful. He becomes emotionally attached to recognized landmarks. The poet Browning expresses the powerful grip of the familiar, even for the normal person, in *Paracelsus*:

> I detest all change
> And most a change in aught I loved long since.

The Assumption of the Inevitability of Change in Human Society

Up to a certain stage in his development, primitive man did not even have awareness of any process of social change, let alone have views about the nature of the causative forces. That change occurs is of course a fact that no one in the modern world can fail to observe. That it is inevitable is also an accepted proposition among educated people, no matter what their cultural milieu. Julian Huxley saw evolution as a self-sustaining, self-transforming, and self-transcending process, directional in time and therefore irreversible.

Some Historical Views of the Ultimate Implications of Change

Early oriental thinkers were little concerned with society except as a backdrop for the soul in its progress to an ultimate destiny. If there was any philosophy of social change, it might perhaps best be expressed in terms of the rhythmic inhalation and exhalation of Brahma, or the alternative ascendancy of Vishnu and Siva in the Hindu Trimurti. Social change was not interpreted as progress toward a higher goal, but rather as a pulsation between constructive and destructive forces.

Babylonian, Hebrew, Greek, and other cultures were characterized by the view that man had fallen from an early state of grace. There was a kind of reverse theory of evolution. Out of such soil grew Plato's vision of the Republic, where change would be directed by human choice toward a perfect society. The attainment of perfection would of course terminate the process of directional change. Other attempts to visualize a perfect society, through More's *Utopia* to Huxley's *Island,* have been based on the same underlying premise. Those of the utopian philosophers who postulated a society attained by man's rational efforts have necessarily rejected his role as a mere puppet in the cosmic process.

The early Christians saw society as an evil from which they expected an imminent rescue. Their efforts were directed at the avoidance of contamination from it rather than toward its improvement. During the Dark Ages, people developed a greater degree of comfort in, or at least of resignation to, their surroundings. Change was slow enough to make stability seem a reasonable state, although the middle class and the revival of learning grew up in actual, if not always open, defiance of such an ideal.

The growth of modern science has demonstrated man's capacity to order phenomena, and thereby to gain increasing mastery over the outer world. His destiny appears to an unprecedented degree to be in his own hands. He has come to believe that he can not only understand evolutionary development, but can also play some part in directing it. The implication is that he can act so as to equate change with improvement or progress.

A peak of optimism was reached in the eighteenth and nineteenth centuries. Such philosopher-scientists as Bacon, Newton, and Descartes saw man's progress following an orderly, predictable upward trend in which human perfectibility and scientific and technical progress would work in happy harmony. The Age of Reason was characterized by a confident conviction that man's rational processes would, if properly cultivated, ensure both the selection of worthy goals and the devising of effective means of attaining them. The literature of the eighteenth century reflected a glowing confidence in the future. The same view typified the Age of Romanticism, during which the youthful Tennyson exhorted: "Let the great world spin forever down the ringing grooves of change," and proclaimed:

> Yet I doubt not through the ages one increasing purpose runs,
> And the thoughts of men are widened with the process of the suns.

Karl Marx came along with a view that was still optimistic, although not quite so flattering of human powers as that of many previous philosophers. His economic interpretation of history assigned to human beings a role in altering the rate of change, but not its direction. Many of his followers developed a fanatical assurance that they could understand the process of change and proceed to a utopian world of social perfection.

Toward the end of the nineteenth century, the evidence of scepticism was increasing. William Dean Inge could write, in his *Confessio Fidei*:

> There is not, and cannot be, any progress in the universe as a whole; and there is no probability that the human race will either reach perfection or find the laws of nature much more comfortable to its desires than they are now. Any philosophy which postulates any kind of progress in the universe as a whole, or unending progress in any part of it, is demonstrably moonshine and not worth discussion. The whole cannot change, and all growth has its natural limit.

In *Tancred*, Disraeli wrote:

> Amid arts forgotten, commerce annihilated, fragmentary literatures and populations destroyed, the European talks of progress; because of an ingenious application of some scientific acquirements he has established a society which has mistaken comfort for civilization.

There has been a subsequent crescendo of observations that apparent progress in some spheres of life has no necessary counterpart in other spheres. The wars of the early twentieth century demonstrated an appalling social failure that shook early confidence in man's perfectibility. Nietzsche in one field and Freud in another stirred an awareness of powerful forces apparently below the level of conscious control.

Theories of an upward trend in human affairs have not, of course, disappeared. Toynbee has supported the idea of such an underlying trend, which must, however, allow for the decline and disappearance of civilizations as part of the process.

The Search for Valid Objectives for Change

We have not been impressed by the forces identified by Nietzsche and Freud to the point where we are prepared to adopt a completely deterministic view of human affairs. It is still generally felt that we are at least to some extent shapers of our destiny, and not merely the prisoners of it. We must, therefore, confront the question of the basis on which one value-orientation can be judged better than another. We must ask ourselves whether the scientific approach can be applied to the evaluation of the competing ends of human action, or whether its usefulness begins and ends with the evaluation of alternative means for reaching objectives chosen on rationally inarbitrable grounds.

Fortunately, we need not condemn ourselves to paralysis while the philosophers are trying to clarify the role of rational processes. In an approach justified by Margaret Mead, we can act on the assumption that the preservation of our own particular society by progressive adaptation is an acceptable basis for action, just as we struggle to preserve the life of an ill or injured human being, and leave the task of defining the meaning of his existence for more leisurely occasions. An uncritical and unreserved acceptance of the proposition that prevention of the extinction of society is a primary aim might of course have been used to justify a fight to the death on the part of German citizens to preserve the Nazi state. One may perhaps legitimately answer that the Nazi state should not have been equated with German society. In fact, opposition to Hitler in the last stages of the war could well have been presented as a defence of a social entity. We must assume, I suppose, that states, like people, tend naturally toward healthy principles of growth.

If I opt out of the responsibility of justifying specific criteria for social or educational change in the light of individual values, I hope I will not be dealt with too harshly. I must remind you that my time is limited and my topic covers a great deal of ground already. Perhaps it will be sufficient if I suggest that I believe personally that most individual growth trends point in a healthy direction, and that social change should liberate and accentuate them. But it does not make sense to me to claim that this view is derived from rational thought processes. I share to the full the doubts of modern philosophers that value and ideological differences can be settled rationally.

The abandonment of the Social Atomistic Theory

Within the framework of acceptance of the values of rationality as a means of goal attainment and the extension of human control over the natural environment, there was room until recent decades for both planners and anti-planners. The anti-planners, who flourished most conspicuously in North America, acted on the basis of the theory of social atomism. This view has been expressed with great effectiveness by William O. Stanley:

> Fundamentally, social atomism rests upon four cardinal postulates. *First,* that the natural individual is a solitary rather than a social being; that he is, apart from and prior to his membership in the social group, fully possessed of the essential attributes of human personality and endowed by natural law with certain absolute rights, not created by society and not subject to social review or control; and, hence, that all social relationships are external, secondary, and contractual affairs in no way necessary to or constitutive of the self. *Second,* that governments were established, under the terms of the social contract, for the sole purpose of protecting each individual in the peaceful enjoyment of his natural rights; and that their just powers are, therefore, strictly limited to those measures necessary

> for the preservation of property and person against private force or fraud, the enforcement of contracts, and the maintenance of civil order. *Third,* that outside the narrow orbit properly assigned to the state all social relationships and all associated activity, where any degree of formal control is involved, must be regulated in accordance with the provisions of voluntary covenants which, by virtue of the unanimous and free assent of the contracting parties, are transformed into a species of law privately enacted but publicly enforceable, and binding upon all of the legally competent persons willingly entering into the associations and transactions specified by the agreement. And, *fourth,* that where, within the bounds of civil order, each individual is left free to think and act for himself, human affairs are so governed by the automatic operation of immutable natural laws, ordained and established by a beneficent Providence, that the complex multitude of discrete and frequently selfish individual acts are woven into a harmonious pattern which not only results, at any given time, in the maximum possible attainment of the public good but also constantly tends in the direction of a progressive and orderly advancement of human welfare.[1]

The Marxist view was a kind of antithesis of the social atomistic theory, with its strong emphasis on radical interventions.

The social order that has resulted from rapid technological progress in recent decades has destroyed the tenability of the non-interventionist position. Reliance on automatic adjustment of complex and interdependent social and economic forces no longer seems to make sense. Automatic adjustment has too many failures marked up against it — failures in terms of technological unemployment, crime, juvenile alienation, mental illness, deterioration of cultural standards, and the like. It is increasingly difficult also to avoid generalizing from international relations, where a laissez-faire approach is obviously a recipe for disaster. The new position is that continuing scientific and technological change must have their counterpart in regular and planned social innovation.

The increasing acceptance of planned innovation has of course aroused certain misgivings. Nations organized after the pattern of totalitarian ideologies do not appeal to people steeped in western liberal traditions. But many serious thinkers dismiss the fear of a drift into rigid and predetermined controls, and find no logical basis for the expectation that rationally planned innovation should do other than enlarge the stage upon which every individual acts.

Awakening Realization of the Urgency of Planned Change

The need to plan social and cultural innovation is not only attaining general acceptance, but is also assuming an air of great urgency. Many are the comments about the increasing rate of cumulative and irreversible technological change. I have encountered no more effective delineation of the situation than one by Robert Oppenheimer, which I shall take the liberty of quoting:

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[1] William O. Stanley, "The Collapse of Automatic Adjustment," *The Planning of Change,* ed. Warren G. Bennis, Kenneth D. Benne, and Robert Chin (New York: Holt, Rinehart and Winston, 1964), pp. 28-29.

> In an important sense this world of ours is a new world, in which the unity of knowledge, the nature of human communities, the order of society, the order of ideas, the very notions of society and culture have changed and will not return to what they have been in the past. What is new is new not because it has never been there before, but because it has changed in quality. One thing that is new is the prevalence of newness, the changing scale and scope of change itself, so that the world alters as we walk in it, so that the years of man's life measure not some small growth or rearrangement or moderation of what he learned in childhood, but a great upheaval . . . To assail the changes that have unmoored us from the past is futile, and in a deep sense, I think, it is wicked. We need to recognize the change and learn what resources we have.[2]

Since we are forced to acknowledge the impossibility of restraining scientific and technological advances, our urgent task becomes one of limiting or reducing, if possible, social and cultural "lag." It is all very well to regard our success in establishing control over our material environment as practically synonymous with human progress. But it is becoming increasingly obvious that social controls are an essential preventive of humanity's own self-destruction. It is also obvious that these controls have not yet been developed to a stage where our future is anything other than problematical.

The Need for Rational Change in the School

The school has long been regarded as an agency for the transmission of culture, and there is no question that this will continue to be one of its primary functions. But society has another increasingly urgent demand to make upon it; specifically, that it play a major part in social adaptation and in reducing social lag. In short, it is called upon to become a leading agency of change.

Unfortunately, the school does not offer a very comforting assurance that it will be able to fill the new role. It has never been noted for its own readiness to adapt its aims, structure, and methods of operating to new social exigencies. A rather drastic change in outlook is called for. Robert Chin indicates the dimensions of the required readjustment as follows:

> Schools as organizations have been trying to minimize conflict. At this point in our history, community and societal forces are generating more and increasingly pressing issues and stresses for schools. Schools can no longer afford to be "happy ships." Indeed, we need "exciting ships" — full of new stresses, conflict, challenges and competition; resounding with new ideas and new programs, more battlefields won and lost, compromised and accommodated; publications, protests, and aspirations of people, all of them growing and caring, for themselves, their colleagues, and above all for their students. Failures, martyrs, and/or canonized heroes and

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[2] Robert Oppenheimer, "Prospects in the Arts and Sciences," *Perspectives USA*, No. 11 (Spring, 1955), pp. 10-11.

heroines of this generation from within the ranks of the schools will then have a chance to rise and to serve as the leaders for change and innovation.[3]

Fortunately there is strong evidence of increased professional concern about the large gap between what is known about good educational theory and practice and what is actually happening in the schools. Evidence of interest in research and the desire to apply sound research results has the earmarks of something more than a passing fad. As Richard I. Miller says, "The gap has always existed and no one is suggesting that it can be eliminated; but educators are becoming increasingly restive about the width of the gap, and the tempo of search for ways of decreasing it is picking up appreciably."[4]

Even more important, perhaps, than the recognition of a major role for research is the acknowledgement of a need to associate research and innovation. Michael Young claims not only that these two do not automatically go together but even that innovators and researchers are unnatural bedfellows.[5] He points out that innovators are often too impatient to wait for research, thus running the risk of producing changes that constitute mere passing fashions. Researchers, on the other hand, are inclined to be overly cautious, fearing that, if they become too closely associated with any innovation, they may lose the detachment they need for fair assessment.

Some Basic Terminology Used to Characterize Social Change

It seems advisable at this point to interrupt the unfolding of my main theme to examine certain terms and concepts relating to change. Implicit in my presentation up to this point has been a distinction between (1) change through transmission of culture and (2) change by transformation of social patterns. The first of these is a process that occurs gradually, inevitably, and often unconsciously. The second, which is implied by the term "rational" in the title of my paper, occurs when individuals and organizations change themselves or others through conscious decisions. We may proceed further to categorize change by social transformation into two types: (1) planned and systematic change and (2) random, unplanned, and reactive change.[6] The second of these is sometimes referred to as homeostatic change, a set of reactive change responses to outside stimuli and events as and when they occur. It was in this kind of change that the social atomists placed what now appears to have been far too much confidence.

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[3] Robert Chin, "Change and Human Relations," *A Multidisciplinary Focus on Educational Change*, ed. Richard I. Miller. (Bulletin of the Bureau of School Service, College of Education, University of Kentucky), XXXVIII, 2 (December, 1965), pp. 26-27.

[4] Richard I. Miller, "Some Current Developments in Educational Change," pp. 7-8 in *A Multidisciplinary Focus on Educational Change*, cited in footnote 3.

[5] Michael Young, *Innovation and Research in Education* (London: Routledge & Kegan Paul, 1965).

[6] *SEC Newsletter*, 1, 5 (January, 1966), pp. 1-6. (Newsletter of the Conference on Strategies for Educational Change, Ohio State University.)

A further distinction applying both to deliberately planned and homeostatic change may be made on the basis of whether change is inward or outward directed. Inward-directed change is involved when individuals or organizations decide to change themselves, and outward-directed change when they attempt to change others.

Planned change has been called a deliberate and collaborative process involving change-agent and client-systems. One might wish that the inventors of the necessary technical terms had chosen a word with fewer derogatory associations than "client" in order to characterize the person being changed, although "changee" has also an air of jargon about it.

The Need for Study of the Process of Change

In terms of the definitions I have offered, it is obvious that the school has always been engaged in the business of changing the learner through the transmission of culture. We are now importuning it to engage increasingly in the process of change by the transformation of social patterns. That is, we are calling upon it to assume more fully the role of the change agent with respect to the society in which it exists. As a means of ensuring that it becomes an increasingly effective change agent, we must place it, from a certain point of view, in the role of the client. Changing the school may be looked upon as an intermediate step in the process of changing society.

What group or groups can appropriately assume the role of change agents with respect to the school? The existence of The Ontario Institute for Studies in Education provides part of the answer. This, however, is a point upon which I shall attempt to elaborate later. At this stage, I would like to emphasize the necessity for study of the process of change as it affects individuals and organizations. The Division of Educational Administration in OISE is already engaged in a study of organizational change in school systems which will probably continue for several years, and will involve the examination of some very fundamental issues. This study will form part of a pattern of such activities being conducted in research centres in the United States and possibly elsewhere.

By common agreement, the need for the study of the process of organizational change is urgent. If anyone in the audience has begun to wonder when I am going to get around to mentioning strategies for effecting change, he may regard this as the point at which the first specific suggestion is being introduced. We must try to improve our prospects of success by obtaining a better understanding of how we can identify potential leaders and develop their talents; of how we can construct and adapt educational as well as other social organizations for particular purposes; of how we can persuade people to follow a specific course of action without generating an unmanageable degree of opposition to it; and of many other equally important matters. Our overriding quest must be to discover means of utilizing innovative intelligence in such a way as to ensure a continuous process of social renewal.

Factors to Be Considered in Influencing Change, with Particular Reference to Education

Although it is legitimate to call for more research into the structure and functioning of organizations, we are by no means so lacking in knowledge that we have no basis for constructive action. We know, for example, that attitudes toward the exercise of authority can have a strong facilitating or inhibiting influence on change. Paul C. Buchanan has observed that most people in organizations see authority as deriving from a formal position which carries with it the right to require certain responses from subordinates.[7] This attitude reinforces routine, mechanical response, with emphasis on the establishment of a minimum obligation. It is an attitude that has been frequently observed among educators.

Educators typically have strongly ambivalent feelings toward the exercise of authority. While they tend to chafe under its formal exercise, they are inclined also, in a disciplined fashion, to avoid confronting or challenging it directly. When they feel a need for opposition, they act in a roundabout way to vitiate the perceived request. If called upon by a superordinate to change a certain practice, their tactics may involve pointing out how difficult it would be to execute the change, or they may take refuge in the weight of obligations or the sheer volume of work that their occupation more or less legitimately entails. Usually, in such situations, they do not suggest alternatives for action, but simply present a negative front.

To the extent that he shares the scholar's antipathy to regimentation, the school administrator often exercises his power apologetically. He may retreat into a rule-citing position where his ability to exert directional influence is minimized. He fails to realize that he must use authority even to get democratic action. His reluctance to engage in positive leadership incapacitates him as an effective change agent.

The antithesis of the exercise of authority by reliance on formal position is that based on the superordinate's identification with the needs and concerns of the subordinate and on his willingness to act consciously, energetically, and decisively in the latter's interests. Since his rights seem to him to be secure, the subordinate feels no great compulsion to defend them. He identifies with the superordinate, and is receptive to suggestions for innovation. He has a maximum opportunity to develop his own qualities of leadership or, one might say, his own potentiality for becoming an effective change agent.

In view of what we know about the effective exercise of authority, an obvious strategy for encouraging educational innovation is to concentrate on identifying those with promising potentialities for leadership and providing them with the right kind of training. Graduate programs in educational administration, such as that being developed in OISE, may be regarded as a device for effecting change.

Related to the way in which authority is exercised and the attitudes of subordinates toward it, is the matter of the stability of the organization itself. While stability may arise from lack of challenge, and organizations unchallenged by internal or external threats tend to be complacent, the organization that resists change most tenaciously is likely to be the one that is most precariously balanced. With complete disruption or collapse an imminent possibility, the margin for error appears small, and innovation offers intolerable risks. Where change is contemplated under such conditions, a new idea is regarded as a panacea, accepted more by blind faith than as a result of conscious choice.

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[7] Paul C. Buchanan, "Innovation in Education," *FSGE Newsletter,* IV, 2 (1965). Published by Yeshiva University, New York.

The society most likely to move in the direction of constructive innovation is the one where a reasonable degree of security and stability are balanced by adequate stimuli for change. The same principles apply to organizations. School systems tend to lean too far in the direction of stability. Education is commonly regarded as a tranquil field of endeavour, not requiring an activist orientation from its participants.

If schools and school systems are to become at once effective change clients and change agents, specific steps must be taken to provide teachers and administrators with social approbation and preferably material rewards for the production and implementation of creative ideas. Not only must change be brought about in such a way that it does not constitute an excessive threat to the status of the educational practitioner, but he himself must be confident that his own innovative attempts are not unduly likely to discredit him, whether they succeed or fail. He must also learn to be satisfied with something less than absolutist levels of attainment; some gratification must result from partial success.

It is not the easiest task in the world to devise tangible rewards for originality, although promotion practices in a society that truly values innovation would bring the creative personality to the top. A facilitating contribution would be to devise means of bending or setting aside the rules and regulations governing an educational system in order to facilitate experimentation. This particular strategy can come about only by administrative fiat.

Organizations tend to develop vertical communication of the neglect of the horizontal. Segregation of people on the same level and fragmentation of activities in departmentalized structures tend to be inimical to fundamental change. Under such conditions, there is little chance of developing broad perspectives or an awareness of basic issues. The indicated organizational strategy is obvious, although the remedy is not easy. People often tend to resist being dislodged from their own localized concerns.

In the broader arena of society as a whole, one may generalize that inter-organizational communication is a necessary condition for effective rational innovation. Constructive approaches typically arise from contact between and clash of varying points of view and awareness of different roles and interests. Also, effective action depends to a large extent on inter-agency collaboration.

It is becoming generally recognized that those actively engaged in the practice of education cannot by themselves develop the body of knowledge upon which effective innovation must depend. A corps of specialized researchers is needed to operate from outside the client systems. This group, sometimes justifiably and sometimes not, may be rejected by the practitioners. The researcher is often thought to be engaged in a program to achieve his own objectives, and to be taking the client into account only in order to manipulate him. Under such conditions, he can expect to obtain at best passive acquiescence and at worst resistance and antagonism.

Manipulative theories represent a failure to recognize both the potential resources within client systems for their own planned change and the necessity for client systems to build into their structures a vigorous change-agent function if change is to be lasting. A successful collaborative arrangement involves shared determination of goals, a voluntary arrangement for joint consultation, and a mutually acceptable distribution of power and responsibility. Both sides must fluctuate from the role of giver to that of receiver. Without such co-operation, research, diagnosis, and recommendations for change can only increase insecurity, aggression, and resistance.

While much has been said about the necessity of co-operation between educational research and practice, such an objective has been notoriously difficult to achieve. However, the establishment of OISE represents the hope that it is not beyond reach. The appropriate strategies must involve an attempt to establish a feeling of identity between researcher and practitioner in a common process and a sense of striving for a common purpose. There must be an over-all heightening of pride in the educational enterprise toward which the different groups have a shared responsibility.

The researcher must be highly sensitive to the attitudes of the practitioner. He must recognize that the latter usually has some explanation or hypothesis in relation to his problems. To the researcher, these may occasionally even appear to be inadequate or ridiculous, but he cannot afford to ignore them. He must take them into account to ensure the ego involvement of the prospective changee.

No matter what his efforts, the researcher cannot always maintain an entirely comfortable relationship with the practitioner. In order to bring about improvement, he must often create a problem for the policy maker, or at least create problem awareness. A practical problem has been described as a gap between aspiration and achievement. The researcher may at times find it desirable to heighten or extend aspirations. In the words of Merton and Lerner, "This requires him to serve as a gadfly, stinging contented policy-makers into a state of discontent by widening their horizons, by introducing new criteria of the achievable and by orienting applied research toward ways of reaching these new goals."[8]

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[8] Robert K. Merton and Daniel Lerner, "Social Scientists and Research Policy," *The Planning of Change*, ed. Warren G. Bennis, Kenneth D. Benne, and Robert Chin (New York: Holt, Rinehart and Winston, 1964), p. 61.

Another inescapable consideration is that adaptive change is expensive in the short run. It requires extra expenditure of time and effort on the part of administrators and teachers; it interferes with immediate operational efficiency; and it often draws heavily on emotional reserves. It is an investment in the future rather than a source of immediate advantage.

Effective strategies must be directed toward a minimizing of the short-term costs, even if they cannot be eliminated. Attention must also be directed toward ultimate benefits. These must be seen in terms of simpler or more effective operations, or else the new practices will simply die out.

The Process of Effecting Educational Change

It seems not only opportune, but even almost imperative at this point in my presentation, to identify a series of interrelated steps in the process of educational change, or perhaps in the process of producing social change through an effective educational system. For this purpose, I am presenting a series of diagrams drawn from various sources. The first of these (Figure 1) was used by Dr. Floyd Robinson in a recent publication entitled *Educational Research — A Parent's Concern*.[9]

Although I have borrowed the diagram from Dr. Robinson, I propose to take some liberties with the interpretation and application of it which he might very well not entirely approve. With reference to the first cell at the top, labelled "Determining Broad Social and Educational Goals," I would have a group somewhat apart from the structure of the Department of Education, but with a direct and well-used line of communication to it. Such a group would deal with philosophical questions relating to education. It would be sensitive and responsive to informed lay opinion as well as to that of educators, but would also help to shape public opinion in constructive directions. A combination of the Policy and Development Council of the Department of Education and the Hall Committee on Aims and Objectives, drawing on certain resources of OISE, teacher training institutions, and other agencies, would in my opinion serve this purpose.

The second cell in the diagram, "Planning: Setting Specific Educational Goals," indicates a governmental function. Broad aims and objectives would be translated into the immediately practical in terms of what was economically and politically feasible. Ideally, those engaged in this kind of planning should not be saddled with administrative responsibilities. They would need to be able to draw freely on the research activities of the Planning Division of OISE, and might call upon the latter to produce a plan to achieve a certain set of objectives, or even a number of alternative plans based on different sets of assumptions, from which they might make a choice in the light of political considerations. The forecasting function is indicated alongside the planning cell. Government statistical services and the

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[9] Canadian Council for Research in Education, *Educational Research — A Parent's Concern* (Ottawa: The Council, 1965), p. 22.

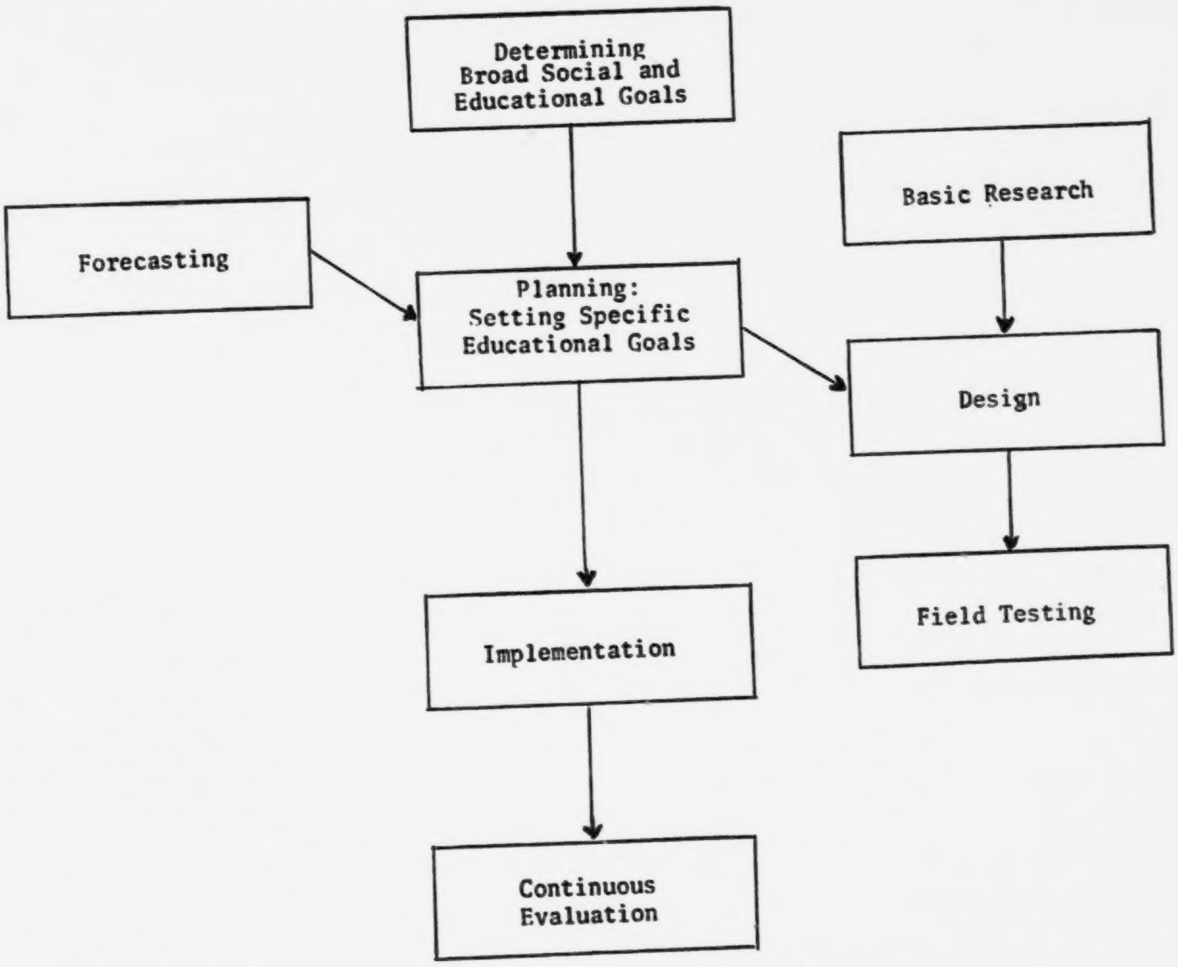
Determining Broad Social and Educational Goals
Basic Research
Forecasting
Planning: Setting Specific Educational Goals
Design
Field Testing
Implementation
Continuous Evaluation

Fig. 1.—Functional relationships in provincial plan for educational development.

Source: Adapted from Canadian Council for Research in Education, *Educational Research — A Parent's Concern* (Ottawa: The Council, 1965), p. 22.

Division of Educational Planning of OISE would contribute the necessary information to fill this need.

Switching our attention to the cell labelled "Basic Research" on the other side of the diagram, we may look to the universities and an educational research organization such as OISE to make the necessary contribution. The latter ideally should be concerned with the whole basic-applied continuum, but should tend to concentrate on adapting underlying sociological, psychological, anthropological, and other principles to the educational process.

The diagram indicates that the "Design" phase should be stimulated by the needs identified by the planning group in the Department of Education, as well as being a normal development from basic research. It might involve the creation of new content as well as the improvement of existing teaching methods or the creation of new ones.

The "Field Testing" stage is practically synonymous with "development" as the term is being increasingly used in education. It involves trying out and adapting the new procedure or technique to realistic conditions in the school system. It implies "taking off the rough edges," familiarizing students, teachers, and administrators with what is expected of them, and preparing for the next stage of implementation. OISE may be expected to take a leading part in the design and field testing stages in co-operation with the Department of Education and local school systems.

"Implementation" is the responsibility of public authorities, although it is a function of great interest to OISE, and some limited assistance from the latter may occasionally be called upon. This phase calls for the construction of courses of study, the formulation of regulations, teacher training and re-training, and supervision. The final step, Continuous Evaluation, implies a dynamic situation where procedures are being modified, re-examined, discarded, and replaced in a steady process of improvement. The role of enlightened, informed, and energetic teachers is vital in this phase.

The diagram shown in Figure 2, "A composite model of a strategy for planned change" is an elaboration of a part of the sequence of steps shown in the previous diagram. It assigns to Development a broader range of activity than the definition I have just given. It shows also a chief characteristic of each of the stages: creative freedom for Basic Research and Design, evaluative control for Development in the laboratory and normal classrooms, and adaptive reality for Implementation. It also shows the overlapping involvement of the universities, OISE, the Department of Education, and the local school systems.

Figure 3 shows a further breakdown of the major steps in the research and development process, with illustrations of the different types of activity. My previous comments have perhaps made the roles of the agencies concerned sufficiently obvious.

Figure 4, adapted from Miller, "Needed Research and Development in the Process of Change," stresses the rather complex nature of the process of developing solutions, testing, implementation, evaluation, adjustment, etc.[10] It also implies the involvement of a variety of elements in the educational system in a continuous process of change.

If we look at the later aspects of the process of educational innovation, it is possible to identify five steps in adoption of a new idea: (1) awareness of the idea, (2) increasing interest, (3) potential utility, (4) initial trial, and (5) adoption or complete use. Employment of the mass media is normally advocated for the first two steps. The last steps are, by common recognition, most likely to be carried out effectively if a successful program can be observed in action. The demonstration centres initiated by the Ontario Curriculum Institute may be extended for this purpose.

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[10] Richard I. Miller, *op. cit.*, p. 80.

STAGE	BASIC RESEARCH	DEVELOPMENT			IMPLEMENTATION
PURPOSE	Theory Construction	Design	Development in Laboratory Classroom	Development in Normal Classroom	Adoption and Dissemination
CHARACTERISTICS	Creative Freedom		Evaluative Control		Adaptive Reality
ORGANIZATION	Universities				
	The Ontario Institute for Studies in Education				
			Department of Education		
			Local School Systems		

Fig. 2.—A composite model of a strategy for planned change.

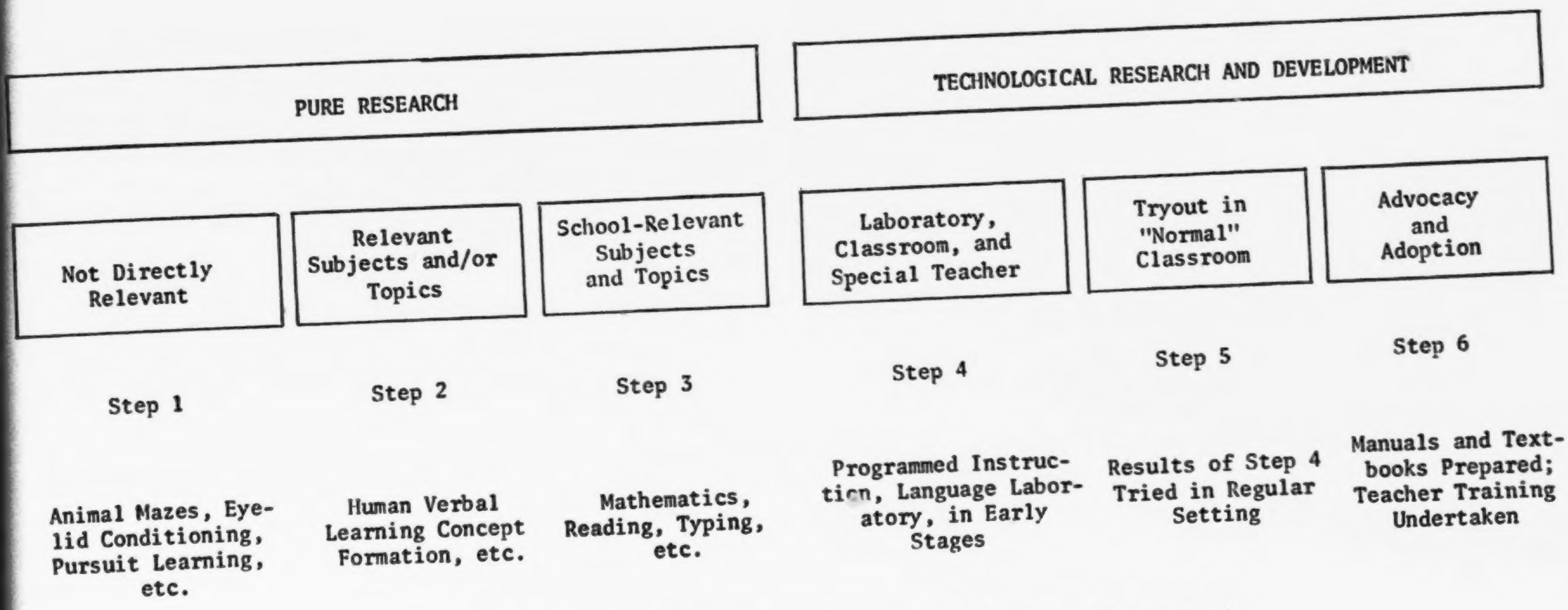
PURE RESEARCH
TECHNOLOGICAL RESEARCH AND DEVELOPMENT
Not Directly Relevant
Relevant Subjects and/or Topics
School-Relevant Subjects and Topics
Laboratory, Classroom, and Special Teacher
Tryout in "Normal" Classroom
Advocacy and Adoption
Step 1
Step 2
Step 3
Step 4
Step 5
Step 6
Animal Mazes, Eyelid Conditioning, Pursuit Learning, etc.
Human Verbal Learning Concept Formation, etc.
Mathematics, Reading, Typing, etc.
Programmed Instruction, Language Laboratory, in Early Stages
Results of Step 4 Tried in Regular Setting
Manuals and Textbooks Prepared; Teacher Training Undertaken

Fig. 3.—Steps in research on learning—pure research to technological development.

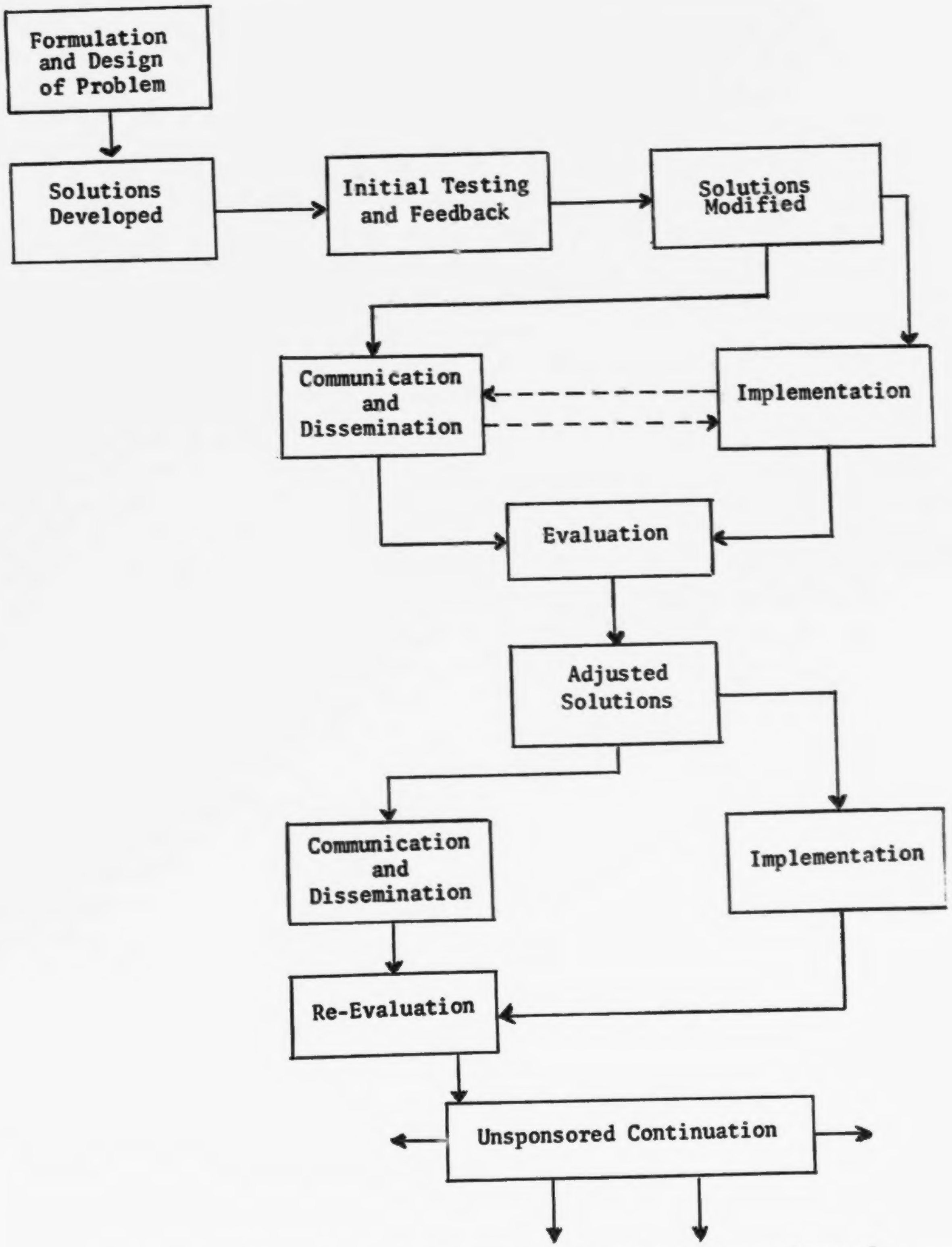
Formulation and Design of Problem
Solutions Developed
Initial Testing and Feedback
Solutions Modified
Communication and Dissemination
Implementation
Evaluation
Adjusted Solutions
Communication and Dissemination
Implementation
Re-Evaluation
Unsponsored Continuation

Fig. 4.—A problem-action continuum stressing a coordinated program of research-development-implementation.

Source: Adapted from Richard I. Miller, "Needed Research and Development in the Process of Change." *A Multidisciplinary Focus on Educational Change*, ed. Richard I. Miller (Bulletin of the Bureau of School Service, College of Education, University of Kentucky), XXXVIII, 2 (December, 1965), p. 80.

There is not, in my view, any acceptable alternative model for educational innovation as a means of effecting social change apart from that of the research and development institute linked with public and voluntary agencies, and, as much as possible, with individual practitioners. But there is a kind of defensive model thrown together by the defenders of the status quo, whose prestige or security is threatened by the creation of a large institute. This model would have research largely done on a spare-time amateur basis by administrators or teachers whose main responsibility is that of effective practice. The defense offered for giving priority to this kind of research is that only the teacher who is in intimate contact with the pupil can contribute to the understanding of his nature and to the solution of his problems. To depart from active teaching or administration is to become guilty of the unpardonable sin of being "impractical" and to render oneself almost immediately incapable of offering any further service to education.

Those who commit themselves to the full-time study of education are put in the position of diminishing unjustifiably and in some vague and ill-defined way the dignity of the teacher. They are commonly presented as being in favour of "centralizing" all research activity by keeping it out of the teachers' hands. There is no real advantage in looking for logic in this model, or in hoping to eliminate support for it solely by reasoned argument.

My closing comment is intended to sound a note of realism. I have suggested in the face of a considerable body of sceptics that the school can not only become an active force for social change, but can move into the forefront of such forces. If it does so, it must build and maintain a closer alliance with other social forces. The approach to social change must be multidisciplinary, and all agencies involved must make a greater effort to square their conceptions of human nature and human conduct and to coordinate their assumptions, beliefs, and expectations so as to reduce to reasonable dimensions the moral confusion of our age.

Panel

T. BARR GREENFIELD (chairman)
OISE

SAM SIEBER
Bureau of Applied Social Research, Columbia University

OLE B. THOMSEN
University of Copenhagen

J. J. LOUBSER
Department of Sociology, University of Toronto

W. G. FLEMING
OISE

Can Rational Strategies Be Implemented?

Sieber:

I would like to elaborate on the points that were made about the failure of the laissez-faire automatic adjustment system as a model for change in education. The few comments I make will be in reference to the United States, though they may have a wider application, particularly in Canada.

It is incorrect to assume that innovation, change, influence, diffusion, and development are *not* going on. They have been going on for sixty or seventy years in the United States and have been increasing in recent years. All kinds of channels of communication are directed at teachers. (The situation might be described as an "overkill" in communication.) There are consultants coming out to the schools, and consultants in the schools who are assigned to special jobs; there are textbooks, syllabi, professional journals; there are research reports; there are the mass media offerings thrown at school practitioners and local citizens; there are curriculum committees, in-service courses, daily bulletins, conferences, and so on. In other words, I feel that one of the major problems is that existing communication channels are clogged up; they're overloaded already. It's not a matter of simply communicating more, it's also a matter of weeding out some of the communication that is going on. You create noise when you have this kind of situation, and you also create conflicting authorities. This chaotic situation is, I think, a major consequence of the kind of laissez-faire situation that exists in the dissemination and innovation apparatus found in our educational systems.

Another problem is that there is no guarantee that the practices adopted are based on anything more than somebody's hunch or somebody's salesmanship. Now this means two things. It means, first, that the failure rate of innovations is extremely high. When textbook representatives come to sell you a new textbook, you probably adopt it; the text doesn't work out, and so you drop it. Nobody knows why you dropped it because there is no research being done on what happens when schools make innovations. There is no research behind the change, and there is none after it is made to indicate why it does or doesn't work out. That's one consequence — the failure rate is so high that it leads to scepticism about all kinds of innovations. The second consequence is that some poor innovations are kept. Just because an innovation doesn't work doesn't mean that you get rid of it. You invest a lot of money in something; you become familiar with it, so you hold onto it. These are two unhappy consequences of a laissez-faire situation where practices are oversold and where there is no basis in research to govern change in schools.

Then there are several barriers to innovation which need to be understood and overcome. One thing we need desperately is research and development on research and development. We know very little about what kinds of models operate successfully. The whole model of R & D comes from the engineering field and industry. Now there is some research evidence that the pure model of R & D doesn't even work there. In the behavioural sciences then, we have to do research to find out what models do work. It may take many years before we know.

Other barriers inhibit dissemination and innovation in schools. There is the costliness of some innovations, and there is resistance from professionals in school systems to demands from bureaucratic superiors. Teachers feel they must act like professionals. One way to do this is to say, "Don't tell me what to do. It's unprofessional." So even if the administrator has a good idea, the teacher may not want to buy it. On the other hand, because teachers are in a bureaucracy, they lack the authority to bring about innovations themselves in the school system. They may read some research reports and say, "This is just what we need." But if this change involves reorganizing the system, they don't have the authority to do it. They have first to sell the idea to the school board and the administrator. Another barrier rises when we expect teachers to draw inferences from research. Since teachers are simply not trained in research, they will not be able to see complications readily. In the case of basic research, the research in fact says little or nothing to the teacher, though it may say much to the developer. But who is training developers in education?

There is a tremendous gap between teachers and sources of new knowledge. I don't mean between teachers and schools of education; I mean between teachers and academic departments where new knowledge is created. There is an enormous gap between what happens in academic departments, between what happens in research and development in various curricular areas, on the one hand, and what is taught and practiced in schools of education and school systems, on the other. For the most part, school teachers interact with schools of education, not with academic departments. They don't keep up with what is happening. School systems do not offer enough reward for innovations. There are rewards for teachers who get children to pass, but none for those really innovating. The merit teaching idea has been generally ridiculed. There is great difficulty in measuring the success of educational innovation.

These are all barriers to be overcome, and we don't know how to overcome them in our developing models for R & D.

Thomsen:

I should like to make a few general remarks. I have been quite impressed in the few months I have been in Canada by the active interest Canadians have in change. I have attended conferences at which change and ways to implement change have been much discussed. In fact, Canada seems a nation preoccupied with change and problems associated with it. At the same time, I have become quite worried about my own country, because the terms "social change" and "educational change" don't exist in my language. So something must be wrong with us! Yet when I look at what is happening in Denmark, I must admit that what you would call educational change is taking place, but without all this discussion. Why is this?

Of course, we *do* discuss the changes that we are going to make, but not the theory of change. We do not investigate and examine theories of change before we make the changes. Somehow I feel as though I have been set down in the midst of people who speak an incomprehensible language. You all know the fairy tale about the Emperor's new clothes, and in many ways I feel like the small boy who, you will recall, says, "But he isn't wearing anything at all!" And I think that this might be something for consideration: do we actually "wear" something when we are discussing social and educational change, or is this talk just an excuse to cover up insufficient educational change? When I have attended conferences, I've listened to all the fine words spoken on educational change, but people went away sleepy and drowsy with words, and having no pattern whatsoever for how to act in future. Perhaps all this talk has been invented in order to prevent change from taking place. Does your talk, your research, merely show the practical educator that we cannot implement change until we know a lot about how change is implemented?

Now I guess I'll have to get into the game, and I should like to make what is perhaps a more practical analysis of the assumptions that our chairman wants us to consider. If we are going to change any particular system — or rather I'm concerned not so much with the *system* as such, but with what the teacher does in the classroom, because that is education — I would say that the first thing that has to be done is to define what we actually want. Very often we don't. We study techniques, and so on, but we have no clear concept of what we want. That should come first. Secondly, we must assign priorities among all the changes that we would like to have come about and define what we want the school to do. The third thing is to determine whether the school is actually doing these things already. We must determine rationally whether the school attains its goals. And, if it doesn't attain its goals, why not? Why doesn't the system function according to its objectives? This study of attitude, technique, and social structure scientifically examines what is wrong in the system. The fourth point is to work out and experiment with probable solutions, to suggest rational measures for the attainment of objectives. Fifth, we must make decisions and plan for their implementation. I should like to add a final point, relevant to this continent, that concerns the feedback process: after making a decision, we should see how it works out, completing the cycle and "reconstructing" it — I think this is the term used by educators here. So, these are the functions. I'm not going to comment on their distribution right now, but that is where the real problem is.

Loubser:

I would like to take another angle, and talk about change again, to complement Professor Thomsen's remarks. I would like to focus on the total educational system rather than on the actual process of education in the schoolroom. The system is, of course, what we are all talking about, what we want to get at and what we want to change. When we talk about strategies and structures to effect change, we talk about things outside the classroom, outside the teacher-student relationship — which is the thing we want to change. We want to talk about what we must do, what structures we must create in order to effect change. When we talk about that, we talk about the educational system as a whole, and all the agencies and structures involved in that system right from the top down to particular classrooms.

I would like to say something about the general categories that are used in relation to change within systems and to emphasize that change of this nature is extremely important. Although we would like to get away from the atomistic theory of human behaviour and its postulate of automatic adjustment, and instead applaud innovation and planned change in whatever activity we deal with, I think it's extremely important not to lose sight of the fact that we are talking about systems. We are talking about social systems, educational systems, things that have some control mechanism, that have some feedback mechanism, like the market or the politician who has to watch out for how the public is going to vote next time. These situations demand prophecies which are part and parcel of the environment in which we must innovate. We have to plan to make proposals that are acceptable to the clients in whom or for whom we want to bring about change. In matters of this kind, the systems point of view provides useful approaches to strategies and structures for change in education. When we talk about the educational system as insensitive to its environment, or about administrative authorities or teachers who are not sensitive — who don't like to be told to change, or who don't like to innovate themselves — we talk about an incapacity of a certain part of our modern society to respond to continuous and rapid changes in economic growth and urbanization, in industrialization, the horizontal mobility of people, and so on. Now the problem, it seems to me, is how do we create a mechanism which would be a part of the educational system, not outside it but a part, operating alongside the Ministry of Education, the local school boards, and the teachers? This mechanism would give the system the capacity to adapt — automatically, if you want — but to adapt more sensitively to the changes that are going on around it in the larger society. Dr. Nyquist, in describing the control agencies that they want to create in the New York State educational system, spoke about structures that have exactly this function. It seems to me that when we talk about strategies and structures for change in education, we ought to consider the system as a whole, and the steps that we must take, not to effect only one particular change (i.e. to introduce the new mathematics in the classroom, give a new content to an English literature course, or anything like that), but to create an educational system that has the built-in mechanism sensitive to the changes in society long after we have implemented our particular innovations. Attacking the problem in this way is extremely important because it forces us to examine from time to time our pet ideas about what's needed in education or what's needed in society. Even if you create a particular body to implement a new set of ideas (like mathematics or some new curriculum), unless there is this predisposition to watch for new ideas which would be productive or useful or necessary in a new changing situation, I don't think that there can be a solution to the problem of creating an educational system sensitive to the changes in society.

Greenfield:

Now I take it that we've had, in a sense, four statements of position, that of Dr. Fleming, followed by our three panel members. What do you members of the panel have to say to each other now, having heard them?

Sieber:

How do you propose to develop this predisposition to change? It soulds like a teacher training problem — or are there other strategies that could bring this about?

Loubser:

Well, I think this will take us several steps back to what may be the real problem of why we find educational systems deficient. They are supposed to educate people to live in the society of which they are to become adult members; why don't they do that job? It has something to do with the nature of the society as a whole, with the values and attitudes of the public in general, the particular type of society of which an educational system is part. I think that when we get to the practical problem of how to create better systems, there are several strategies which might be important. I don't think, for instance, a program of re-training teachers would be as valuable as perhaps giving teachers three months off during the year, or during the summer, to give them a chance to bring themselves up to date with their own subjects. At the same time, a seminar could be held for them on the necessity of being adaptable and responsive to the changes that are taking place, not only in their subject matter, but in their society at large. But this is only one aspect that I think might be involved.

Thomsen:

Now, if I understood correctly, Dr. Fleming also relied fairly heavily on the changing of attitudes and methods.

Sieber:

In the training of leaders, I think.

Thomsen:

Yes. I would be reluctant to trust authoritarian decisions from the Department of Education or any other body. It is a very slow process, changing attitudes. They are one of the most resistant things we possess, because they are very often mixed up with roles: that is, if you have an organization like a school, a university, or technical college, the attitude of the teachers will be intermingled with roles and role expectations. If you suggest a change, you also usually suggest changing teachers' roles, and nothing is so embarrassing as a threat to your own role and to your position among others. This is one of the most stubborn factors innovation confronts, and therefore I wouldn't rely too heavily on the change of attitudes. It would take a very long time, but you have to do it; you have to train teachers. We do this in Denmark where we have a college for the advanced training of teachers. At any one moment about one-quarter of all teachers in Denmark are voluntarily enrolled in this college for re-training in such areas as new mathematics, new geography, and so on. But this is only one way to secure teacher collaboration and co-operation. You certainly must rely on authoritarian decisions too.

Greenfield:

Isn't this the whole sum and substance of the paper Dr. Fleming presented this morning: that there is in our school system a set of interacting roles which some people view as inadequate to carry out the goals and purposes of education? What is proposed here is a mechanism to intervene in the school system, so that those roles can be changed. Now, I think we needn't spend too much time debating whether this is a theory of change. We have before us several strategies for intervention, several models by which education can be changed. Are these adequate? Do we need these models? These are questions we might ask ourselves here.

Loubser:

May I say something about Dr. Thomsen's point here? I fully agree that teacher re-training is more likely to ensure the acceptance and implementation of whatever innovations, designs, and new planning might come from the research institutes or the Department of Education. Certainly an extremely important aspect of that last step of getting a new idea accepted is to create more of a disposition in teachers to become involved, to identify — through ego involvement, as Dr. Fleming called it — with the change. Teachers are part of this process and we must involve them in implementation of change and in the constant evaluation of what they are doing. As to what you call authoritarian decisions, I would fully agree that to expect change without creating control agencies at the highest level to constantly probe the system, to look for new ideas and new demands in the situation, would be to build failure into our efforts to make system-wide changes.

Sieber:

I think Dr. Fleming resolved the issue by pointing out the need to build rewards into the system to motivate teachers to change attitudes, practices, and so forth, but then we raised the question, "What *are* the kinds of rewards that we can build into school systems to continually make teachers want to change and innovate?"

It seems to me there are several ideal types of strategy: built-in rewards is one, the point brought up a moment ago about changing attitudes is another. There are a couple more; let me briefly outline them. I've been thinking about this recently and I'm still not completely settled about how this really works. These four ideal strategies seem to me to be anchored in the image, or stereotype if you will, that people have of school teachers or practitioners in general. There is the "rational man" theory which tends to be held by the academic scholars; they see the practitioner as a rational man: all you have to do is give him a new PSSC course, a new textbook, tell him the truth, and he will get it to the students. No problem. The locus of change is an internal, intellectual change. All you have to do is convince teachers on intellectual grounds that PSSC, for instance, is how physics really is and how it should be taught: you don't have to persuade or coerce to induce change. This is the "rational man" view, and the target in this view is the ignorance of the teacher. All you have to do is overcome this ignorance. No problem. The means used to accomplish such a rational strategy is one-way communication: mass media, lectures, films, prints, speeches, conferences, and so on.

Then there is another strategy which is based on the stereotype of the practitioner as a co-operator, a "good guy" who wants to get along, wants to keep up, wants to be given the right attitudes. The locus of change in this respect is internal and attitudinal, rather than internal and intellectual. The teacher changes his attitudes and is willing to have his attitudes changed. The target is apathy instead of ignorance as in the case of the "rational man" strategy. Here the means by which the strategy is carried out is interactive communication: the change agent goes into a school system to work with teachers; he organizes curriculum development activities. There is feedback, reaction, and so on; there isn't just the one-way communication as in the "rational man" theory.

Then there is a third strategy based on a stereotype of the practitioner as resister, as an enemy: he doesn't want to do anything, doesn't want to change; he would like to stay just the way he is. The target here is bad practices. Get rid of these practices, to hell with the practitioners. We don't care if we knock their heads together; let's change the practices. Sometimes this is a very valid position to take, for example, in overcoming discrimination in schools in the United States. This is an external structural change.

In the first instance there was internal intellectual change; the second strategy was directed toward internal attitudes; the third one is aimed at changing the administration and organizational structure of the school system without caring what happens to the attitudes or the intellects of the people involved. In this last case, legislation, political pressure, legal coercion, are obviously the major means to desegregate schools. Changing certification for teachers and introducing system-wide syllabi that originate in some central agency are other means for making such changes.

The fourth kind of strategy is one that the sociologist would like, and I think this is the one that Dr. Fleming was proposing when he spoke of building rewards into the system. Here we think of the practitioner not as a rational man, not as a co-operator, not as an enemy, but as a status occupant embedded in a social system. The target here is the reward system, which must be changed in some way. What *are* the rewards people want? Some are money, power, and status within the system. There are ways in which you can improve the status of teachers; the team teaching situation has been proposed for this. It hasn't been proven that it actually works this way, but it is one way to change the reward system, so that senior teachers have more status. Merit rating of teachers is another means of changing the reward system. Perhaps you don't like these means, but nevertheless, this is the type of strategy used in this theoretical image of the practitioner as a status occupant, as a political animal if you will. So these are four ideal types of strategies. I don't know if this determines a framework at all, but it clarifies a great deal for me.

Greenfield:

Does this lead us now to an examination of the agencies or the institutions in which these functions might be carried out? Are there comments from the panel on this? Dr. Thomsen, I think you had some comments reserved on this issue.

Thomsen:

Well, my comments are made on the assumption that the steps or functions that I have suggested are valid in some way; they may be as good as many others.

Greenfield:

Are they so much different?

Thomsen:
No, I don't think so. I am quite in agreement with the model that was suggested by Dr. Fleming, by and large. That is, I find that we must distinguish carefully between the role of researchers and the role of politicians and administrators; I will leave out the practitioners, the practical teachers for the moment — but this is in keeping with what has been done so far.

I find that the researchers are first of all the formulators of values. The education process has two steps, I would say, two points: there is the definition of objectives, which is a matter of values, and then there is teaching technique, where many values are involved. The process of education can be described in many ways, but I would say that when it comes to devising techniques and to assigning possible values, the co-operation of researchers is valuable and necessary. This is what we really should do. We, as researchers, should be responsible for the descriptive side of education, but the decision as to what values should go into the school system, what objectives the school should pursue, should be a matter for the administrators and the politicians as agents of the people. These men are elected by the nation. On the one hand they are leaders in their own right, but also they were elected as leaders, so they must make decisions that are just a bit ahead of the perhaps more conservative population. Decisions come down from the politicians and the Minister of Education, through his civil servants, to the school system. At this level are the teachers. Perhaps I might say, if I have understood your paper correctly, that I find maybe they have been assigned too modest a role in this co-operation. As I see it, the paper stated that we had to secure the teachers' co-operation.

I find that we must have a circular movement linking the administrators, the decision-makers, the teachers, and the researchers, a circle of communications. This is how I can conceive that researchers, for instance at OISE or similar institutions, could do research; this is how they could tell the administrators and the teachers what must be done to attain a specific goal. They could set up a lot of goals for administrators to choose among, but the researchers would not make the choice among these themselves, and they would not implement them. The administrators and the teachers, according to their level of responsibility, would make the decisions, take the advice or not, but they would be the ones to make the decisions and implement them. This, very roughly, is what I would like to see.

Loubser:
I think this last point is well worth emphasizing. On the one hand I think this is what Dr. Fleming had in mind when he talked about creative freedom as one of the characteristics of basic research. Just as this is one of the characteristics of research, I think one of the characteristics of administration is effective authority to make decisions and to implement plans and ideas. I think this summarizes the essential nature of whatever new agencies one would create in an educational system: they would have at the same time the creative freedom to develop new

ideas, to test them out, and so on, but without necessarily diminishing the authority of the decision-making agencies such as the Department of Education. Professor Thomsen's emphasis here is on the separation of functions, if you will, of effective authority — decision-making on the one hand, the implementation by the practitioner on the other hand — and the planning, design, and research by the sort of institute we have in mind here. In this connection I would just like to comment on Dr. Fleming's discussion of the problem of the relationship between the researcher and the practitioner. Now his reference to Michael Young's paper on the polar aspects of the role of innovator in research indicates that we have to think here of a more complex role set or system than of researcher and practitioner alone. The researcher has certain built-in inefficiencies in his role of devising new ideas for a system in which the practitioner works. We must here consider (in addition to the administrator), the planner, the practitioner, and the researcher. We must consider the role of people who are more directly involved in actually designing and bringing about the new programs and new ideas that have to be implemented in the school system. It is very unlikely that these people will be primarily researchers, or that they will have their "role identity" as practitioners in the first place. There are indications of a need here for a middle-man who would have access to, and communication with, the researchers, the practitioners, and the planners; who could grasp new ideas and have enough feel for the practical situation to see how to apply them to concrete situations. There is a lot of unofficial sociological knowledge about this that one wouldn't like to propagate too widely, but I think communication often flows through the unofficial channels. Official channels of communication can be set up, and the circle completed as Professor Thomsen suggested, only to find that the devices don't work. (From our practical experience in the Department of Sociology, for example, we find that the men's room is the most important channel of communication. You very often find out more about what's going on through casual chats than you do through official channels of communication.) I think this non-communication is a danger; architecture has something to do with it. This sort of contingency is very difficult to plan for in a rational way. How do you "build into" an institute (I don't know the new building of the Institute yet, so I don't want to make any reflections on it in this regard) this overlapping or circular communication between the researcher and the practitioner? This is a question that somehow must be taken into account, even though it is difficult to plan a physical place for any organizational set-up.

Fleming:

We have given, I hope, some practical thought to how this particular function can be performed, and there are feelings, I think, in favour of a variety of categories for those who would convey innovations to the practitioners and, if possible, implement them. There are two in particular that seem promising. I don't want to go too far in suggesting what the future might bring, but if they are not mutually exclusive, a larg[illegible]spectoral force in the educational system might very well develop more defini[illegible]inks with the body of researchers. This would involve frequent and regular con[illegible]t and—I don't want to suggest that there has been nothing done in this regard in the past, but this is a completely new beginning—there might well be a strengthened emphasis on the expectation that school inspectors should be aware of new ideas and researchers' recommendations. They should have a particular responsibility to encourage attempts by local school systems, teachers, and administrators to try out new ideas. They would perhaps bring something in the nature of evaluation of abilities to the local school system, and thus could act as a bridge.

Another promising development, it seems to me, is in the teachers' federations. I don't want to suggest that I am up to date with all the latest thoughts in this area, but I feel as if the move toward appointing local representatives of the teachers' federations with some responsibility for encouraging teacher research and development activity also could be very productive, either through headquarters or in some other way acceptable to both the institute and the federations. The federation representatives, in carrying out their functions, would have a direct line to the source of research findings and then could help communicate these to the field. These possibilities, and others I think, are quite in line with the role that you are suggesting.

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The Research and Development Center Program in the United States

Change in Education

While it is too much to say that education in the United States is in a crisis, there certainly is widespread recognition of the fact that the new social and cultural situation of today makes new and different demands upon education and that the present system must be modified in major ways. In part this awareness of shortcomings in the United States' educational system was, in the years past, a reaction to an alleged educational "lag" behind Russia. Some, under the impact of Russia's spectacular space age successes, believed that the United States had fallen behind, and for a while this concern was a highly dramatic and popular issue.

However, the sustained and profound involvement and co-operation of governments and intellectuals for the improvement of education in the United States came about not only, and not even primarily, because of the celebrated Sputnik issue. In fact, the United States has gone through a period of very rapid social change that has affected all aspects of its social structure, and the existing pattern of education appears, at least in part, out of phase with social needs. The change in the last thirty years or so has been so drastic that it must be compared in historical significance to the building of industrialism, which transformed the agricultural society of the United States into the industrial giant we know.

It is rarely recognized just how fundamental the change in the social structure has been. It might be described simply as the transformation from the society of the open market economy of industrialism in the steam and iron age to the carefully steered economy and the organizational society of the age of automation. It is a process which has many aspects, such as the continued increase in urbanization which has led to the growth of mammoth metropolitan agglomerations and profound alterations in the nature of city life; the growth of complex and interlocking organizations in the public and private domains, accompanied by an increasingly organized regulation of social life; increasing similarity between the great regions of the United States; and an enormous increase in the interdependence of the whole nation in politics, economics, and culture. Many of these transformations have been out of phase with each other, and there are new social problems and strains. Large segments of the population have been left out of participation in the new patterns of life.

Education as an Economic and Political Influence

All these aspects of social change, however, work together to make the educational system more central, more directly visible, a matter of greater concern to larger numbers of people than it ever was before, since formal education is today the gateway to social participation. Education in the schools is serving more than ever before as a selector in determining the social status and the occupational roles of individuals and the prospects for progress of communities and regions of the country. The nature and the quality of an educational system is now socially recognized as a factor of major economic and political importance. Politically, the increasing pervasiveness of the influence of the federal government has had the effect of making schools principal agents of change for implementing many public policies.

This has occurred without an open disavowal of the traditional ideology of pluralistic state and local responsibilities for education, but the actual change is clearly evident in the lever role assigned to the schools in such national policy matters as racial integration, the "war on poverty," permanent overseas commitments, and scientific conquests of space. In addition to the public school systems, the universities are one major focal point of this change. Not only do they have to absorb greater and greater enrollments, but they are becoming involved, to an increasing extent, in the affairs of the nation in all domains. The intellectual resources of the universities are naturally being drawn upon to help in the task of educational innovation and reform.

Because of the new recognition of the vital role of the schools in cultural growth and in public policy, criticism of—and even impatience with—existing practices became popular. Many intellectuals argued that the schools could teach better, could reach more children, could guide their development to greater heights of intellectual attainment and social maturity, if only all the relevant knowledge in our possession were rapidly applied. Whether it was justified or not, the belief was widespread that the cause of educational improvement, both in depth and in scope, should be a matter of national political and general intellectual concern.

Genesis of the Research and Development Center Program

This, roughly, is the context in which the federal government called on the services of a group of intellectuals to develop a strategy for educational innovation and change. Much of the original impetus for this came from Dr. Francis Keppel, then U.S. Commissioner for Education. It was then, and is now, the goal of the strategy to mobilize all relevant intellectual resources in the country, especially in the universities, and to create a series of new institutions which would not only produce, through research, much needed insights into the educational process, but which also would open up new channels of communication and dissemination of knowledge.

Vast financial resources are being made available by the federal government. The expansion of federal resources committed to the total work program is truly spectacular: expenditures of the United States Office of Education for research alone have soared to approximately $100 million per year from a budget of only $5 million five or six years ago. An increase in research appropriations on this scale (which has not yet reached its limit) reflects the seriousness of the national sense of urgency and the strong faith in the significance and power of educational research.

The increased scope of research support is related to a change in the form of support. Research financed by the United States Office of Education's Bureau of Research used to be, in practice, confined to specific, limited projects. Any individual or institution interested in a more or less circumscribed problem could draw up a research proposal and submit it for funding. These proposals were judged on their merits by review panels, but it was relatively rare that the Office of Education attempted to influence the selection of research topics directly. The finding of researchable problems was basically in the hands of the individual professional. It so happens that most research proposals concerned themselves with problems properly classified as educational psychology.

A number of years ago the Office of Education decided to supplement this kind of research support through long-term grants for the creation and maintenance of extended research programs (as against projects) and research-oriented institutes. A new strategic consideration entered the picture. The belief was, and is today, that there are problem areas of major significance for the future of education which can only be attacked successfully if a coordinated, well-planned, long-term effort is made towards their solution. The U.S. Office of Education did not abandon its older form of support for specific project proposals, but it supplemented it with large-scale support for problem-centered research organizations.

At the same time it was felt, however, that these new institutes should not restrict themselves to purely academic research, the results of which would merely be published in professional magazines. The practical needs of the schools in the country called for the development of tested educational programs and devices which would be tried and readied for use by these new institutes. The result of these deliberations was the decision to support Research and Development Centers which would address themselves to the task of developing materials, procedures, devices, and programs that could be put to immediate use. It was felt that the work of such institutes would cut the time lag between the discovery of an educationally useful theory or procedure and its implementation, which was variously estimated as being at least twenty-five and possibly fifty years. This is the Research and Development Center Program.

Elementary and Secondary Education Act of 1965

In 1965 further legislation was introduced which went even beyond the authorization for the Research and Development Centers. The passage of the Elementary and Secondary Education Act of 1965 (Public Law 89-10) provides the basis for a much broader expansion of new institutes. The purpose of this new legislation was, as stated in House and Senate reports, to "provide a broader base for the support of research development programs designed to insure that quantitative increases in education are accompanied by vastly improved quality." The new act provides for grants as well as for contracts for research and demonstrations. It authorizes grants and contracts for the dissemination of information resulting from the research; it permits awards to be made to public or non-profit private agencies, to institutions or organizations, or to individuals; and it provides grants for training in educational research. The new act authorizes the appropriation of $100 million over a five-year period for the construction and operation of Regional Educational Laboratories for research and services in education.

Regional Educational Laboratories

The Educational Laboratories will be institutes of considerably larger size than the Research and Development Centers. Usually they will be formed by a federation of a number of established institutions such as universities, colleges, school systems, state departments of education, and other groups concerned with education and educational research. Sponsoring groups may also include professional associations, foundations, representatives of business, of the arts, and labor organizations. It is expected that there will be Laboratories in all parts of the United States. Many of them will be Regional Laboratories providing operational services for educational institutions and systems within the region.

Each Regional Laboratory will include a research section, but its primary emphasis will be on services and on the dissemination of innovations. Since each laboratory is supposed to meet the needs of its particular region, Laboratories may differ from each other in important ways. They may conduct research in higher and adult education as well as in elementary and secondary education. Some of the Educational Laboratories will be focused on major program areas, rather than on a specific region; therefore a number of them may be quite similar to the Research and Development Centers.

This much about the context of the Research and Development Center program; it should not be considered in isolation. The Centers are one element in a vast national effort for educational improvement. We must keep the relations of the Centers to the Laboratories well in mind. Now let me turn specifically to the Research and Development Centers.

Research and Development Center Program

Organization of the Centers

The Research and Development Center program is designed to concentrate intellectual and financial resources on particular problem areas in education over a long period of time. Each Center is to attempt a significant contribution to the improvement of educational practice on the basis of a thorough theoretical understanding of its problem area. The program is based on a simple theory of the relationship between research and its practical implementation. Somewhat schematically, this theory is that research, development, and practical implementation form a continuum. On one side of this continuum we find the pure researcher. He is interested in basic scientific or scholarly problems and he uses the methodologies of his particular discipline in order to arrive at a solution. Next, we have the developer who turns the results of basic research to some practical use and invents a program, or materials, which could be of practical significance. In the third step, such products would be field-tested and possibly changed on the basis of the results. These proven materials would be distributed through the channels of dissemination so that they would become known to principals and teachers and would finally be implemented and put to classroom use.

In the field of education, as in other fields, two major types of communication gaps traditionally existed, breaking the "continuum": the gap between the basic researchers and the developers and the gap between the developers and the practicing workers. The Research and Development Centers are assigned the task of bridging these gaps and of creating organizational arrangements which facilitate communication. This means that each Center must strike a careful balance between several activities which were often considered mutually exclusive, such as basic research, development of educational materials and devices, field testing and the construction of appropriate evaluation instruments, the demonstration of programs and the development of strategies for the dissemination of information. In order to effect this balance, each Research and Development Center is usually based within one university, but it is connected with a network of co-operating school systems and other institutes as the need may be. Depending on its particular program focus, it brings together a balanced mixture of different behavioral and social scientists, subject matter specialists, administrators, and educational practitioners. Each Center must, according to the "Guidelines" published by the Office of Education, be an integral part of the sponsoring institution (drawing part of its financial support from it), but it also must have a unique identity and sufficient autonomy. The Office of Education awards grants in support of Centers on the basis of judgments by review panels made up of distinguished scholars.

The Research and Development Centers are, thus, new types of institutes in educational research. They are not pure research organizations, since they concentrate also on practical development. They are not nearly as much involved in routine information gathering or processing services as the older research bureaus in education, which often depended on local sources of funds. In fact, the Research and Development Centers de-emphasize such regional services and concentrate on problem areas of national significance. Services, such as testing or computer analysis, will be provided by the Regional Laboratories.

The Research and Development Centers also differ from many older educational research bureaus in that they are interdisciplinary. Almost all of the established Centers today have on their staff psychologists, sociologists, often also economists, political scientists, natural scientists, engineers, educational researchers, educators, and possibly still different professions also. In many cases the Research and Development Center did not even originate in the school of education within the parent university. Many different relationships with the schools of education have been worked out.

Specific Centers and Their Programs

The actual implementation of the program began in 1964 with the founding of the Learning Research and Development Center at the University of Pittsburgh, with which I am connected. Almost at the same time, a Center was established at the University of Oregon to work on problems related to the social contexts of school organization and administration. In 1965 two additional Centers opened their doors, one at Harvard and one at the University of Wisconsin. In 1966 five more Centers were set up: at the University of California at Berkeley; at the University of Georgia; in New York, a Center which is sponsored by six New York institutions of higher education; at Stanford University; and at the University of Texas.

The Learning Research and Development Center (LRDC) at the University of Pittsburgh has the goal of improving instructional practice by developing a behavioral-science-based technology for education. This includes specific teaching devices and display methods, such as computer-steered devices for learning, and complex instructional programs. A large number of professionals from the behavioral sciences, especially from psychology, and from educational research and also sociologists, subject matter specialists, educational practitioners, and technologists collaborate in the Center.

One of the Center's major development programs, to be mentioned by way of an illustration, is the "Program of Individually Prescribed Instruction." In this program the Center has prepared highly flexible sets of instructional materials for elementary school reading, science, and mathematics—mostly in the form of student work sheets. These materials are used in a new pattern of school and classroom organization, permitting each student to progress at his own learning speed, unconstrained by the slower or faster pace of others in the class. The teacher "prescribes" for each child after the completion of each learning step the most appropriate next task from among a number of alternatives. She is aided by a carefully designed program of tests, some of which are embedded in the curriculum materials.

The study has potentially serious implications for the preparation of curriculum materials, for school organization, and for the professional role of the teacher. Preliminary results of student progress under the system have been most impressive. Also, it appears that the role of the teacher becomes even more important in this program than it used to be, in spite of the heavy use of prepared materials and tests. In this case we have an instance of a program development which is being field tested in a school in the Pittsburgh area, and recently a demonstration of it, leading possibly to the adoption of the program, has been made in a group of Illinois schools.

Another major program area in LRDC is the construction of a computer-assisted instruction laboratory. This laboratory will provide an experimental automated-learning environment. Primary emphasis is being placed on display and control media, the goal being to explore how the most sophisticated electronic technology could be put to work for teaching. In connection with this program the LRDC has entered a relationship with Westinghouse Corporation which provides for greater resources and access to technological expertise. In still another program area a study of the relationship of poverty to educational deprivation is being conducted. The Learning Research and Development Center also is highly conscious of the experimental nature of its own organization. It has, therefore, provided for continuous self-study and an advisory board of distinguished scientists, educators, and administrators.

The Center for the Advanced Study of Educational Administration at the University of Oregon has an entirely different focus. It addresses itself to the study of the social context of educational administration and school organization. If the central professional group in the Learning Research and Development Center at Pittsburgh are the learning psychologists, at Oregon the central group are sociologists, political scientists, and experts in educational administration. The social contexts according to the Oregon Center include the educational institution itself; the larger educational systems, of which a particular educational institution is a unit or a segment; and the larger social environments, in which the educational institutions are located and which they serve. The general objective of the Center is the improvement of educational administration and of school organization. The Center hopes to develop specific programs that may provide more rational and efficient solutions to major administrative and organizational problems in education.

The Center for Research and Development for Learning and Re-education at the University of Wisconsin investigates cognitive learning processes and conditions of learning, concentrating primarily on subject matter content and organization and on instructional media. It applies the available knowledge of cognitive learning to particular problem areas in concrete school settings, such as the teaching of science or English, teaching reading to culturally disadvantaged children, and the design of a total instructional system for the achievement of optimal learning in the cognitive domain.

The Center for Research and Development on Educational Differences at Harvard University investigates differences among individuals, as they affect learning and instruction. Its work spans a wide range of psychological, socio-cultural, and other variables which make for critical learning differences. Its goal is to develop programs which will make schools more responsive to these differences and which may enable the school to use them for the benefit of the individuals they serve. This program focus is a matter of particular significance in the context of a varied and highly mobile population, in which flexibility of the school in building upon the particular characteristics of individuals would be a considerable advantage.

The Centers thus far described have been in operation at least a little while. The remainder of the Centers have just recently opened their doors. The Center for Research and Development in Higher Education at the University of California at Berkeley studies the purposes, organization, outcome, and direction of higher education in the United States. It will bring the theoretical perspectives and the methodologies of the social sciences to the problems of higher education, and should contribute to basic work in the social sciences, as well as help college and university personnel to gain new perspectives on the sources and consequences of their activity. The Center will study the characteristics of students at the time of their arrival, the impact of the college, the administration and organization of colleges and universities, state systems of higher education, and the processes of change in higher education. It is addressing itself to a domain of education which has remained largely outside the scope of educational research. However, at the present time it constitutes a particularly important focus.

The Research and Development Center in Educational Stimulation at the University of Georgia will attempt to determine how a program for early and continuous educational stimulation of three- to twelve-year-old children may increase their competencies in cognitive, aesthetic, and psycho-motor skills. It is the goal of this Center to demonstrate just how far children can be taken if education starts at the earliest possible time. The work of the Center could, conceivably, produce results which may force us to revise our beliefs about the proper timing of educational experiences.

The Center for Urban Education in New York differs from the other Centers in that it is an independent, non-profit corporation, sponsored by several universities. Its activities cut across some of the problems investigated by other Centers because its focus is on the totality of education in the contemporary urban setting. It works in four broad divisions, concerned with educational practices, child development, special education, and community research.

The Research and Development Center for Teacher Education at the University of Texas will develop and try out improved programs of pre-service and in-service teacher education. The College of Education at the University, which is the home of this Research and Development Center, will collaborate with the Austin Public Schools in providing a number of different teacher education programs for experimentation and assessment.

The Center for Research in Teaching at Stanford University has set itself the objective of improving the theory and practice of teaching. The Center will attempt to develop teaching techniques and to help schools and teacher education institutions to adopt recommended techniques.

Patterns of Organization

This very brief description of the existing Research and Development Centers indicates that they cover a wide range of topics, all of which stem from specific attempts to make education more responsive to the new technology, culture, and social structure. The topics do not form a consistent theoretical scheme. In fact, a number of Centers overlap in their research emphases. The organizational structure of the Research and Development Centers also does not follow a neat pattern. It varies because their design has to take into account differences in the local conditions, in the character and preferences of the leading personalities, and of course in the administrative requirements of the different programs. For example, we can single out three very different patterns of organization.

The Pittsburgh Learning Research and Development Center is a self-contained unit within the University. Its administration is fairly centralized and research programs are rigorously selected to fit in with the Center's intellectual focus. It has a special relationship with the School of Education in that the Dean of the School of Education is also the Administrative Chairman of the Center, but in most practical ways the relationship between LRDC and the School of Education is not closer than that between the Center and the Departments of Psychology or Sociology. By contrast, the Research and Development Center in Teacher Education at the University of Texas is closely integrated into the College of Education. The administration of the Center is interrelated with a number of outlying agencies. For example, the Center's administration includes one associate director who represents the Austin Public Schools, another associate director who represents the Texas Education Agency, and a Research and Development Coordinator for the Austin Public Schools. The unique Center for Urban Education in New York sets still a different, third example. It is an independent corporation which, however, does maintain a number of relationships with its sponsoring agencies.

Which one of these organizational patterns will prove most useful, and under what circumstances, is still an open question. The program is young and experimental; careful studies of organizational processes are necessary.

Organizational Problems

In spite of this variation in structure, all Centers face a number of similar organizational problems. The most general one is how to maintain effective administration which directs program-oriented team research without curtailing the intellectual freedom of the investigators. To be sure, many applied research agencies in industry, in the defense field, and in other institutions have dealt with this problem for some time and have evolved a store of experience. Most of these agencies, however, are not connected with universities. The task of the Center director is a difficult one, because he must deal with highly individualistic university faculties who provide the core of his professional staff, and still be able to guide their efforts to the solution of collective tasks. To play this role requires a combination of intellectual-scientific, political-diplomatic, and administrative-bureaucratic abilities.

It is no wonder, then, that some of the Centers have found it preferable to separate the role of the research director from that of the administrative head. The Pittsburgh Center was originally designed in this pattern; the understanding was that the administrative director would have a strictly facilitating task, leaving the majority of decisions on programs and goals to the research director. Even with this kind of arrangement it is difficult enough to find competent persons to be leaders of a Center. As the number of these institutes increases, this scarcity undoubtedly will be felt even more.

The professional staff also face a situation which differs in many small and some major ways from the typical patterns encountered in universities and colleges of education. Because the institute's work is program-focused, the worker in the Center must be willing to co-operate with others and subordinate, at least at times, his personal preferences to collective decisions. Naturally, there must be limits to such co-operativeness. Especially at the level of a major professional figure, the Center must guarantee a large sphere of intellectual freedom, and yet it cannot be organized along the lines of an academic department. It may be that the Centers ultimately evolve something like a "federal" arrangement among senior investigators. There are precedents for this in other fields, but we cannot yet say that the patterns have been worked out in this particular program.

The junior professional staff face a situation in which their work is evaluated by professional criteria which differ from the customary assessment of publication record and teaching performance by the universities. In large measure, their success depends on their effectiveness in the working team. The ultimate product of this team often will be not a publication but a program or device. The psychologist, or sociologist, or political scientist collaborating with educators, then, may have a gratifying impact on education—but his own profession may not take any note of his work at all. In the Pittsburgh case I have observed that the junior professionals, especially the behavioral scientists, try very hard to strike a balance between their professional standing in their original profession and their program-oriented work at the Center. Again, it requires wisdom of the Center directorate not only to permit such a balance but actually to promote and facilitate individual scholarly work in addition to the team efforts.

Another set of organizational problems arises from the fact that the theory of a continuum between pure research and implementation through the stages of development, field testing, and demonstration does not work automatically. In the original design of the Pittsburgh Learning Research and Development Center, it was planned to have different working groups along the stages of this continuum, so that each particular product would progress from the hands of the pure researchers, through the developers, to the field testers and demonstrators, and finally to the implementors. This notion really does not work very well.

In fact, there is ample historical precedent to show that the transformation of intellectuals' insights into practicable and accepted innovations occurs most readily if the whole process is directed by one man or by one group of people who stay with their product throughout. This, however, would demand from the professional worker a versatility and an almost constant shifting of roles which again is often impracticable. Therefore, the Learning Research and Development Center, at least, has come to rely increasingly on professional workers of a type perhaps best described as "middle men." They are persons with a great deal of practical experience in education and a wide range of personal acquaintances, and they are highly sophisticated in the behavioral sciences and understand precisely what the researchers and developers are talking about. These people have as their basic goal not the furthering of research, but the improvement of education. They are skillful in interpersonal relations, and know much of administrative matters. This type of versatile "middle man" is very scarce in our age of specialists. There is no systematic training for his role, even though such training is clearly possible. The scarcity of this kind of personnel, however, is only an illustration of the much more general problem of scarcity of all kinds of professional personnel for the Centers. They are new institutes; they play new roles; and they are expanding at an enormously rapid pace. There will be an increasingly stiff competition for highly qualified professionals.

In the long run, therefore, training programs for social and educational research, as well as for research administration, and for the role of "middle man" will have to be supported on a large scale. The United States Office of Education has already taken certain steps in this direction by instituting traineeships in research training, but at this time the existing Research and Development Centers have not yet adequately dealt with the issue. Each Center also has an obligation to educate future professionals. It may be that in the future the structure of at least some Centers will have to be somewhat modified in order to provide for systematic training of students.

Relationships to the Universities

This brings me to the topic of the Centers' relationships to and impact on the universities in which they are situated. Since all of the Centers rely very heavily on collaboration with behavioral and social scientists, the usual pattern is that psychologists, sociologists, and others who are working in the Center hold a joint appointment in the appropriate academic department, and educational researchers hold a joint appointment in the college of education. Many departments welcome such arrangements because it strengthens their program. However, where the Center's work is not related to the academic functions of the department, the holders of such appointments may become rather marginal and neglected department members. Such an unfortunate outcome may give rise to conflicts and even to career problems for the people involved. Some Centers are therefore interested in supporting the graduate programs of the departments they work with by sponsoring graduate assistantships and dissertations.

I may venture the guess that in the long run the existence of the Centers, with their vast resources and the benefits which they can make available for the departments, will have a most useful effect on the relations of the behavioral and social sciences to education. For example, at this time it is far less prestigious to be an educational psychologist than to be an experimental psychologist, and the same holds by analogy for all other behavioral and social sciences. The inter-disciplinary nature of the Centers, the fact that each of them is an institute of national significance, the large resources which they can make available, and the intellectual stimulation should modify this situation. In fact, if the Center is located in a university with relatively weak behavioral and social science departments, the pendulum could conceivably swing too far in the opposite direction and distract the departments from their central mission.

The impact of the Centers on colleges of education will be even more significant and direct. There have been instances in which the faculty of colleges of education were at least initially suspicious of a Center and its new and different approaches to educational research, and of the influx of behavioral and social science personnel. Again, speaking of the long run, I think the assumption is fair that the very existence of the Centers will modify the intellectual climate of the colleges of education with which they are directly connected—and ultimately possibly of all colleges of education. The result should be a greater readiness to be open for the behavioral and social sciences.

Impact of the R & D Center Program

The Research and Development Centers can only address themselves to factual questions; they produce factual knowledge and technical development. By themselves they cannot be relied upon to answer the fundamental philosophical questions about the goals and values of education in modern life. The most beneficial impact of the Research and Development Centers in Education would be a lively dialogue between the fact- and the technique-oriented researchers and developers on one side and the educational humanists on the other. Some educational humanists in schools of education, I know, have adopted a defensive anti-technological stance. Such a stance is untenable. Similarly, an over-reliance on research and technology could be disastrous. There is a serious task ahead for the educational philosopher which requires of him that he understand the sometimes complex and even startling technical innovations which the Centers as well as other institutes produce. It also must be asked of the Centers that they remain aware of, and open for, the concerns of the educational philosopher. Fortunately there are signs which point in the direction of the beginnings of such a dialogue.

It really is too early to say what the impact of the Centers on education in the United States will be. We do know that there will be some impact. Only a minor part of it, and I think we can say this with confidence, will be due to the direct adoption and implementation of techniques developed by the Centers. A much larger part may consist of a change in the atmosphere of the intellectual community at large, and in colleges of education. Such a change would affect generations of students and through the students the practices in the field.

The impact of the Centers will be intensified by the co-operation between them and the Regional Laboratories. The U.S. Office of Education is planning to build a communications network and even an information retrieval system which should speed the flow of information between the Centers and the Laboratories and the schools. Just how this is going to work we cannot know as yet.

At this stage, we see the initial phases of a large-scale national strategy for educational improvement. In a sense it might be considered a gigantic experiment drawing on vast political, financial, and above all, intellectual resources. Because of its size and because of the urgency with which it is being promoted, it is not a neat and tidy experiment. Many questions of immense practical significance, such as those of the relationship between the Research and Development Centers and the Regional Laboratories, will have to be worked out in detail as the program moves along. The issue of just how further particular emphases of research and development should be selected also has not been finally settled. The coordination among the Research and Development Centers at the national level is inevitably in its infancy. A number of proposals for such coordination have been made, a few conferences of Center directors have been held, and even the notion of a "Super Center" for the planning of educational research has been discussed. These uncertainties are inevitable, and I should rather think that the ability and the need to innovate, to break new ground adds to the enthusiasm and to the pleasure in their work which we can observe in the working groups related to this program. The program is opening opportunities for innovation in educational research, in educational practice, in administrative and organizational arrangements, and in professional patterns. Nobody can say it now with certainty, but if we look at the context of rapid social change in the United States and at the scope of the intellectual ferment in education, it just could be that the Research and Development Center program will make a significant contribution to the creation of an educational system which can, indeed, play a central role in the great historical transformation of society and culture which we are witnessing today.

SOME MATERIALS ON THE RESEARCH AND DEVELOPMENT CENTERS

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Commentary

RICHARD I. MILLER
Director, Program on Educational Change, University of Kentucky

Before turning to some comments on Dr. Holzner's paper, I would like to mention that many of us in the United States are watching with keen interest The Ontario Institute for Studies in Education. We believe that you will be able to take the best from various efforts around the world and come up with something better.

Dr. Holzner has written the clearest and most perceptive account of the Research and Development Centers (R & D) that I have read, and there is little I would change. My remarks, therefore, will be more in the way of elaboration, with some related points brought up.

I do believe that Dr. Holzner was too kind in his remarks about colleges of education in the United States. It seems to me that they more nearly fit the pattern mentioned by C. P. Snow:

> In a society like ours, academic patterns change more slowly than any others. In my lifetime, in England, they have crystallised rather than loosened. I used to think that it would be about as hard to change, say, the Oxford and Cambridge scholarship examination as to conduct a major revolution. I now believe that I was over-optimistic.[1]

England has recently established a new College of Education and we hope that it will be able to move into some approaches to teacher education that we have only talked about in the United States. As Dr. Holzner points out, we have genuine hopes that the R & D Centers, as well as the Regional Educational Laboratories, will be able to bring colleges of education more actively into the mainstream of innovation and change in education.

The role of research and development in American public education remains at a very low level indeed, although the direction is upward—slowly. In 1962 we calculated the commitment of public school funds for research and development to be 1/10 of one per cent; the United States Office of Education (USOE) calculated it at 2/5 of one per cent in 1965; and recently the USOE Associate Commissioner for Research, Richard Bright, used the figure of "less than one per cent."[2]

The problems related to research and development in the United States might be said to be fourfold. The first problem is competent researchers. The USOE estimates there are now only 500 full-time researchers in the United States.[3] (On this point, Title IV of the Elementary and Secondary School Act makes provision for developing educational researchers. About 700 will be enrolled this summer in special research seminars, which usually last for six weeks, and 1,300 more will be enrolled this fall.)

The second problem relates to (a) getting research into form that can be usable for school people and/or (b) getting it into the hands of "middle men" who can interpret it to school people.

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[1] C. P. Snow, "Miasma, Darkness, and Torpidity," *New Statesman*, 2, 1587 (August 11, 1961), p. 186.

[2] The "1/10 of one per cent" figure was calculated by the staff of the NEA Project on Instruction; the "2/5 of one per cent" appeared in a statement by Francis Keppel before the General Subcommittee on Education and Labor, House of Representatives, January 22, 1965, p. 48; and the "less than one per cent" figure is from an article by Richard Louis Bright, "Back to the Drawing Boards," *American Education*, 2, 5 (May, 1966), p. 14.

[3] Bright, *ibid.*, p. 14.

A third problem concerns effective use of the research. And a fourth one concerns evaluation of its effectiveness.

Based upon this sort of breakdown, one can see the problems involved in the manufacture and utilization of research. Production of good research is just part of the continuum. (I would estimate that 75 per cent of the research done in the United States is rather feeble.) Dissemination, effective utilization, and evaluation are also vital aspects along the theory-practice continuum.

The Federal Programs

Dr. Holzner mentions that the initial phases of a large-scale national strategy for educational improvement can be seen. His choice of words seems particularly appropriate as it steers us away from the ultra-sensitive matter of national curriculum-making or policy formation. With over $1 billion per year in the 1965 Elementary and Secondary Education Act distributed among many different programs, it is necessary to coordinate efforts and avoid unnecessary duplication. In this respect I have been working on a three-way chart for a report entitled "The Process of Change and Title III," prepared for the United States Office of Education, regarding federal programs Title I, Title III, Title IV, Title V "labs," USOE Cooperative Research, and R & D Centers. It plots the degree of their involvement in these processes related to educational change: research, development, evaluation, demonstration, dissemination, and implementation.

The resulting chart points out rather clearly a vital role of the Research and Development Center Program: it is the only federally sponsored program that places primary focus on research and development. The USOE Cooperative Research program also emphasizes research and development, but this effort is on an individual project basis rather than on a depth, interdisciplinary basis. The chart also points up areas of rather considerable overlap, such as demonstration, and it points up areas of little activity, such as evaluation and implementation.

The influence of the United States government in education is a matter of lively speculation at the present time, with many shades of opinion among educators, ranging from those favoring much greater federal assistance and influence to those who see the threat of conformity and uniformity behind the massive infusion of federal monies into public education. Dr. Holzner makes an interesting observation when he mentions that "the increasing pervasiveness of the influence of the federal government has had the effect of making schools principal agents of change for implementing many public policies." This observation is particularly true with respect to the Civil Rights Movement. However, there is little evidence at this early hour on whether the federal influence is having a significant influence upon instructional practices, which are at the heart of the educational program. We think so, but it is a feeling rather than a fact.

Dr. Holzner's remarks about the "middle men" concept seem most relevant to the increasing degree of specialization that will be necessary in the future. To the "middle man" I would add the "educational engineer," who is related to the middle man but who has special expertise in bringing about change in an effective manner. Specialists in change are employed and trained in several other areas, such as in agriculture, industry, and pharmaceutical supplies, but we have done very little in education. Indeed, the study of the process of change has just come of age in the United States. Outstanding work is being done at the University of Michigan, the University of Oregon, Ohio State University, and Teachers College, Columbia University. And the USOE is setting up a new program for developing educational change agents that is known as REAP (Research Educational Assistance Program), but these efforts are just a beginning in terms of the need.

Non-Federal Programs

While other speakers likely will elaborate in greater detail, I would like to call your attention to several other types of research and development programs that are under way in the United States. The Educational Services Incorporated (ESI) is one type of organization that differs from the R & D Centers and from the Title IV Laboratories in having no federal sponsorship, although much of its support is from the National Science Foundation. Also ESI has maintained a remarkable degree of flexibility and informality in administration and operation. It has been able to attract outstanding scholars to assist in developing various materials for the classroom, primarily in mathematics and science.

The $34 million Time-Life and General Electric consortium may be able to devote significant resources to the research and development of its educational products.

We should not overlook the few public school systems in the United States that are doing outstanding work in research and development. Livonia, Michigan; Jefferson County, Colorado; and Granby, Connecticut, would number among this small but growing group.

We should not overlook the few study councils that are doing some outstanding work in research and development. The New England School Development Council in Cambridge, Massachusetts, is exercising a leadership role in this regard.

And we should not overlook the fine support that some United States foundations, notably Carnegie and Ford, have given to research and development. Their support has served a valuable catalytic function before the massive entry into education of the federal government. The relationship of the federal government and the foundations was the subject of a recent small conference in California.

Title IV Regional Educational Laboratories

Perhaps a word of elaboration on the Title IV Regional Educational Laboratories would be of interest. The following general functions have evolved: (1) conduct educational research, (2) provide facilities and equipment for research, (3) carry out the training of individuals for leadership in such activities, (4) translate the findings of research into feasible educational practices and programs, and (5) assist in the implementation of productive change by disseminating innovative programs and practices throughout the region being served.

One of the major requirements set forth in the USOE "Guidelines" for establishment of the Labs was that economic, social, and educational activities within the region would contribute to the study of the educational needs of the region and to the solution of the problems involved.[4]

As the prospectuses of the eleven Labs are studied, one is impressed by the vast co-operative effort these represent. If nothing else is ever accomplished, the fact that thousands of college educators, scholars, public school officials, and many others worked together for the first time is highly significant in itself.

One is also struck by the considerable diversity among the eleven Labs in structures, programs, and designs. Diversity in programs includes: a focus upon a single problem, broadly treated, such as cultural deprivation; a detailed and sophisticated design for effective dissemination and innovation of the program and process of a single school; teacher education in which student teachers view video-tapes of their classroom performance; a vast array of unrelated individual projects; an information clearinghouse function; and a center to evaluate and field-test new instructional media.[5]

Dr. Holzner spent some time on the relationship between the R & D Centers and Title IV. His point that this relationship will need to be worked out as the programs develop seems to make sense. The future of the R & D Centers in the United States is not clear at this time. One gets the feeling that the Title IV Regional Laboratories will soon overshadow the R & D Centers; certainly that is in the offing as far as appropriation of funds is concerned. USOE officials expect to have 20 Regional Laboratories in operation by the end of the next fiscal year, and in the next three or four years it is estimated that close to $5 million per year may be available for each Laboratory, or at least some of them.

There is a feeling among some educators and USOE officials that the R & D Centers are becoming tied too closely to the university community and not closely enough to the public schools. The validity of this criticism would seem related to one's expectations for the R & D Centers. If they are to focus primarily upon basic and applied research, then a very close attachment with the intellectual resources of our universities is necessary. On the other hand, if they are to become more active in demonstration-type activities, then the dissemination function takes on greater importance. (The R & D Centers are charged in their terms of agreement with a dissemination function, but most Centers have felt it was more important to have something to disseminate; hence the initial focus has been on administrative procedures and program development.)

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[4] U.S. Department of Health, Education and Welfare, Office of Education, Bureau of Research, Division of Laboratories and Research Development, "Guidelines for a National Program of Educational Laboratories, Public Law 89-10, Title IV." OE-2240c (Mimeo).

[5] This description of the Title IV Regional Laboratories is taken from a report on the subject to Educational Services Incorporated by the author.

In my opinion, it would be unfortunate if the strong research emphasis of the R & D Centers becomes diluted or cut in too many ways, and there may be strong pressures to take this route. The R & D Centers are breaking important new ground in the much needed area of research and development. They represent a creative innovation on the American scene, and time for adjustments and modifications is needed, but the over-all development does look promising at this juncture.

PHILIP TAYLOR
Research Director, The Schools Council, England

Curriculum Reform in England: The Role and Function of the Schools Council

My purpose this afternoon is fourfold: to describe to you the structure of the Schools Council, to explain how it works, to discuss why it works, at least in as far as it does work, and to analyse as best I can its strengths and weaknesses as an agent for educational change in twentieth-century England and Wales.

In order to achieve this I have prepared five diagrams, which I hope will help you to see reasonably clearly what it is I am talking about. It will not matter that you cannot take in all that is conveyed in them. It will, I think, be sufficient for you to appreciate their contents in general terms. And it will certainly mean that I can eliminate from what I have to say a great deal of description.

The Schools Council for the Curriculum and Examinations, to give it its full title, was established in July, 1964. A Working Party representative of the major forces in English education under Sir John Lockwood, the late Master of Birkbeck College, had previously recommended its establishment to the then Secretary of State for Education. The Working Party made recommendations about the Council's structure and representation, and the Secretary of State agreed to finance it. Thus the Schools Council had a truly English conception and a conventional confinement but was, nevertheless, not born a conventional child. It was born to be independent of all its parents and yet to be the handmaiden of the practising teacher, for it was the practising teacher who was to have the major representation on all the Council's many committees.

Structure of the Schools Council

In an array of the forces in English education, the Schools Council is located as shown in Figure 1.

Only two of the organizations shown possess statutory powers: the Department of Education and Science and the Local Education Authorities (L.E.A.'s), and it is, in fact, only this latter group which possesses any in the field of the curriculum. Between these two organizations there has grown up a concept of partnership, implicit in which is the understanding that the Secretary of State for Education will not resort to legislation to enforce his policies and the L.E.A.'s will not hinder the implementation of these policies. Indeed, they will do all they can to facilitate them, provided they are reasoned and financially supported. This is the power context to which the Council is heir and of which it takes advantage. In trying

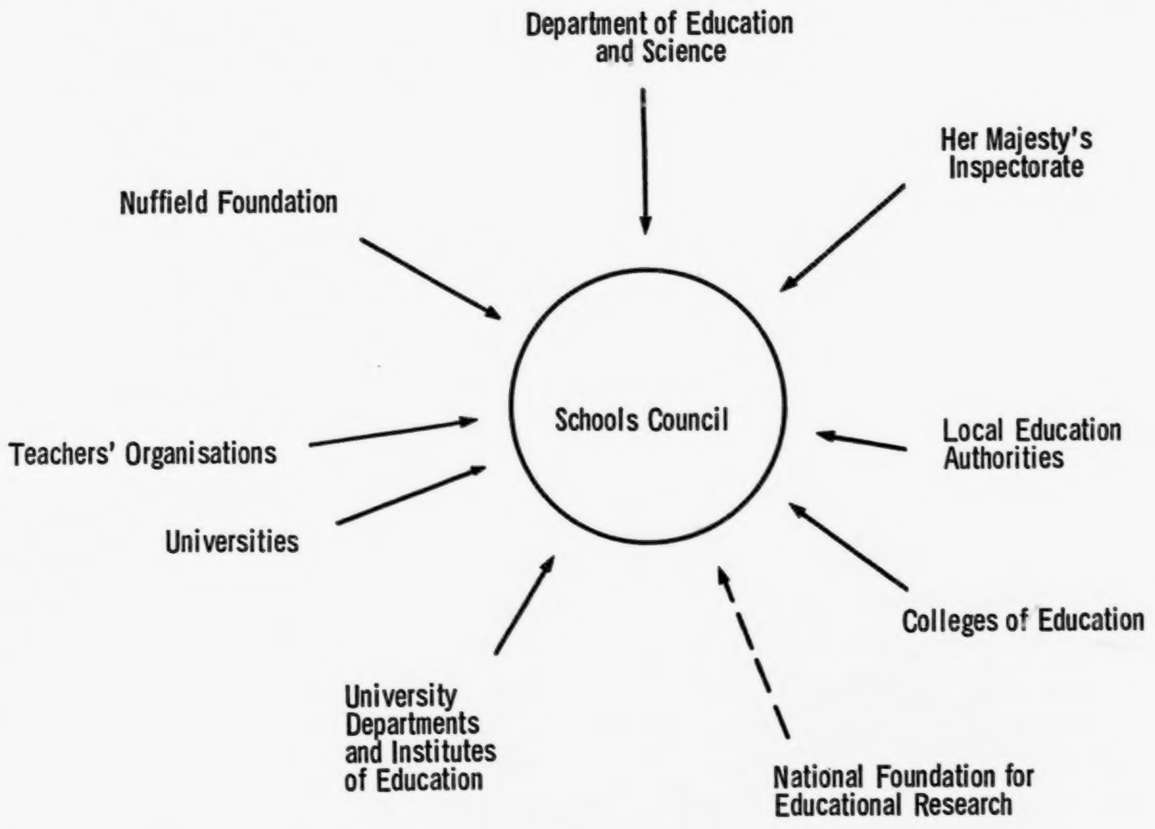
Department of Education and Science
Her Majesty's Inspectorate
Nuffield Foundation
Schools Council
Teachers' Organisations
Local Education Authorities
Universities
Colleges of Education
University Departments and Institutes of Education
National Foundation for Educational Research

Fig. 1. — The Schools Council in relation to other forces in education (England and Wales).

to understand why the Council works, it is important to know how power in English education is exercised. It is equally important to realize that this kind of power depends very much on a mutual acceptance of the integrity of principles.

The Local Education Authorities are the main agents of educational policy at the level of over-all provision of plant, staff, and services. The main agents of what goes on in schools, of the curriculum and the ethos in which it functions, are the head teachers and their staff. They are freer to make decisions about what is taught, how it is taught, and about the conditions of teaching, whether these are formal or permissive, than in any country of which I know. In fact, the freedom of the teacher is a cornerstone of professional attitudes. Its meaning has not been analysed nor has the contemporary history of its emergence been studied. It is, however, a potent factor in the educational context in which the Council works.

Between the centre and the periphery, i.e., between the Department and the Local Authorities and the teachers, is the Inspectorate. Its function is advisory. Its members advise teachers, L.E.A.'s, and the Department of Education. Sociometrists would, I think, refer to them as "pivots," as hinges on which much hangs. Their role has undergone much attrition since the Inspectorate was first formed. Nevertheless, they form a powerful group disseminating attitudes and opinions, acting as guides and counsellors with quiet anonymity. Most have considerable academic distinction; all have been practising teachers. They are, as you will see, well represented on the Council.

How the Council Functions

Given, then, that the Council exists in an environment where the exercise of power is through mutual give-and-take and in which there are firmly established educational forces and attitudes, how does it discharge its functions? It does so through a formal committee structure, serving which is a secretariat with supporting staff. (See Figure 2)

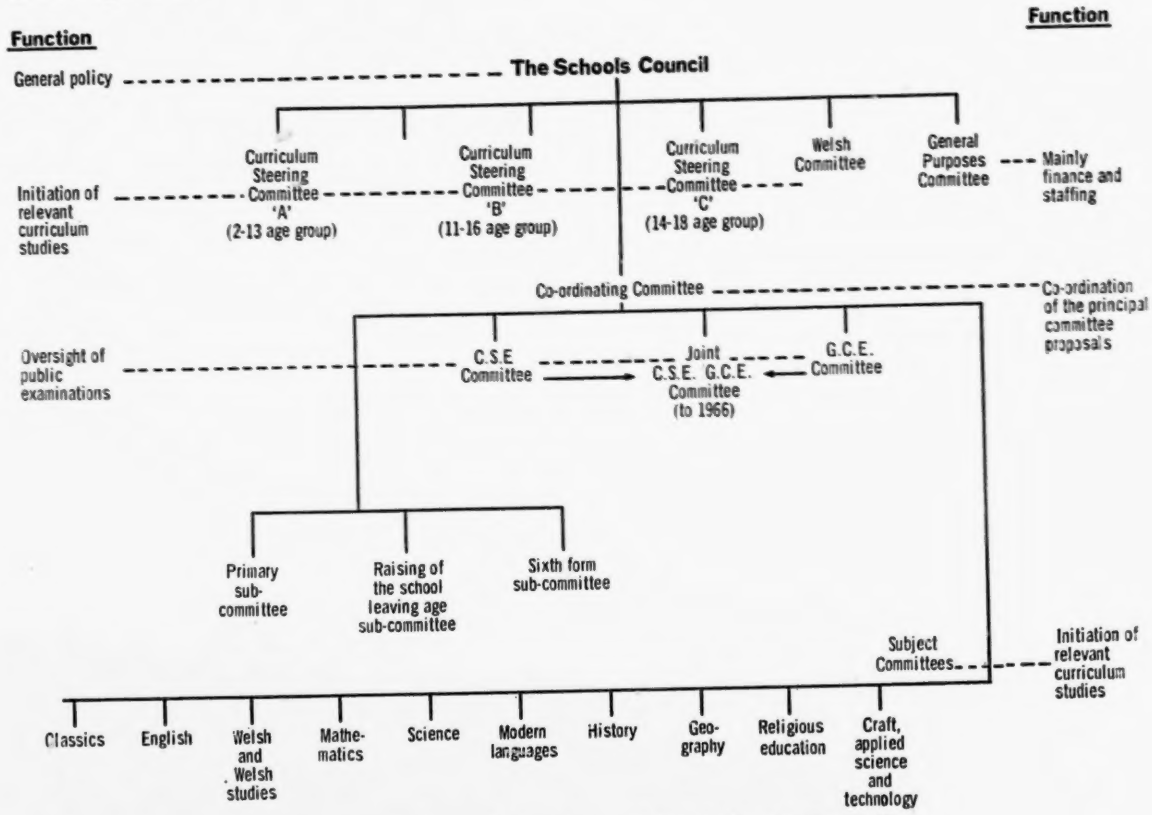
Function
Function
General policy
The Schools Council
Curriculum Steering Committee 'A' (2-13 age group)
Curriculum Steering Committee 'B' (11-16 age group)
Curriculum Steering Committee 'C' (14-18 age group)
Welsh Committee
General Purposes Committee
Mainly finance and staffing
Initiation of relevant curriculum studies
Co-ordinating Committee
Co-ordination of the principal committee proposals
Oversight of public examinations
C.S.E Committee
Joint C.S.E. G.C.E. Committee (to 1966)
G.C.E. Committee
Primary sub-committee
Raising of the school leaving age sub-committee
Sixth form sub-committee
Subject Committees
Initiation of relevant curriculum studies
Classics
English
Welsh and Welsh studies
Mathematics
Science
Modern languages
History
Geography
Religious education
Craft, applied science and technology

Fig. 2. — Formal structure of the Schools Council.

The committees are ordered more or less hierarchically, with the Council at the head. It is at the annual Council meeting that broad general lines of policy are cleared. It is only the Council which can alter the constitution. The Council reports to all its members and to the public at large, not to any one of its members. It thus asserts its independence in its formal behaviour.

The Co-ordination Committee

The most important Council committee is the Co-ordination Committee. Here the work of all other committees is given its focus, and it is here that the major decisions of all committees are evaluated in terms of the Council's major purpose before they are finally acted upon. Members of the Co-ordination Committee are also members of many other Council committees and thus are familiar with the discussions behind the decisions taken.

Council committees vary in their strengths, in their talent for critical appraisal and compromise, and in their creativeness. But one thing characterizes them all: the freedom they exercise to take risks as far as they believe is necessary. This, of course, means false starts and dead ends, as well as new and more total formulations of problems. It is in committees that members from different fields of education educate each other in their respective ways of thinking. It is also in committees that, by sheer horse-trading, mysteries are allowed to remain mysteries. But then this is the price that may have to be paid to make changes possible in the practical world.

The Secretariat

Behind and supporting the Council's committees is the Secretariat, organized as shown in Figure 3. There are three Joint Secretaries, one each from the Department of Education, Her Majesty's Inspectorate, and the Local Education Authorities. These are in turn serviced by civil servants on secondment to the Council; by a Research Department, the members of which are on secondment from various universities; and, in curriculum development work, by teachers also on secondment. The Secretariat has a twofold function: to initiate proposals for the consideration

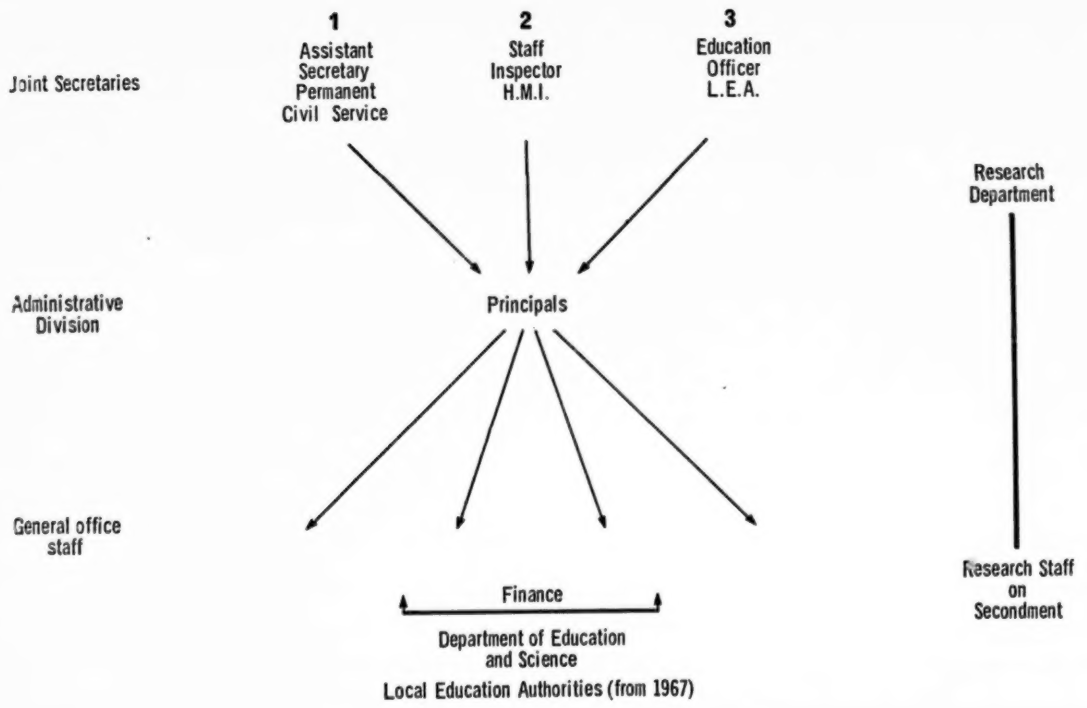
Joint Secretaries
1
Assistant Secretary Permanent Civil Service
2
Staff Inspector H.M.I.
3
Education Officer L.E.A.
Research Department
Administrative Division
Principals
General office staff
Research Staff on Secondment
Finance
Department of Education and Science
Local Education Authorities (from 1967)

Fig. 3. — Schools Council Secretariat.

of committees, and to act on the decisions taken. At least, these are its formal functions. Informally, the Secretariat follows up promising possibilities, conducts preliminary discussions, sounds out lines of approach, keeps its ear to the ground, conducts teach-ins largely for its own benefit, and deals with the hundred-and-one issues of daily business.

The Research Department

The Research Department has to do its job inside an organization which disclaims any aspirations to be a research agency. Its function is to identify for the Council areas where research is needed, specifying its nature and suggesting individuals and agencies best fitted to conduct the research. It is also required at times to act as a holding company for researches which can be conducted only by a number of agencies working co-operatively. At yet another level, the Research Department tests the feasibility of research proposals by conducting pilot studies, and, in addition, provides technical support for the many study groups set up by Council committees.

The Research Department's formal role is to be of service. Its informal role I personally would describe as educative, and therefore, at this level, it is something of an irritant, and necessarily so. The Research Department has not had ascribed to it, nor has it sought, a major role in decision-making. Interestingly enough, its views are always sought on major issues.

Thus far, I trust that I have made it reasonably clear where the Council stands in relation to the major forces in English education, what its formal structure is, and how it is serviced. Now I want to turn to the products of its first two years.

Council Projects

Projects in Conjunction with the Nuffield Foundation

However, before I can do this I must bring clearly into focus another organization which you may have noticed in Figure 1, the Nuffield Foundation. This is a trust dedicated to philanthropy and with large enough financial resources to make an impact. The Nuffield Foundation was one of the first of our national bodies to become involved in curriculum reform, to sustain its interest over a long period of time, and to take up an ever-broadening approach. Without the investment of Nuffield resources and energy, the Schools Council might never have been. Nuffield was undoubtedly the progenitor of a national response to the need for curriculum reform. It is now one of the Council's major allies in the field of curriculum development and innovation.

Together, the Nuffield Foundation and the Council are responsible for development work in science, mathematics, and modern languages at both the primary and secondary levels. The Nuffield Foundation has mounted two other major projects with which the Council is involved: the Resources for Learning Project and the Social Studies Feasibility Study. The Foundation, in addition, supports many minor projects, some of which in time will become major studies.

Nuffield Foundation activities produce teaching materials which have been given extensive field trials in many schools under a wide range of conditions. The Nuffield curriculum groups are led by particularly able teachers working with groups of academic subject specialists and with steering committees, the members of which are drawn widely from among professional educators.

The Council facilitates Nuffield trials through its good offices with Local Education Authorities and through its close links with the Inspectorate. The Inspectorate, in fact, makes a considerable contribution out of its knowledge of the state of teaching and of local conditions, and makes a similar contribution to Council activities from the planning to the operational level.

Major Council Projects

With the Nuffield Foundation already making a major contribution to curriculum reform, the Council was free to concern itself with those areas most in need of reappraisal. Projects were undertaken in three main areas.

The Raising of the School-Leaving Age Project dealt with the area presented by the intention to raise the school-leaving age in 1970 to sixteen years of age, especially where it concerned the average and below-average pupil. Problems in this area had been highlighted by a report of the Central Advisory Council on Education in *Half Our Future*. Particular emphasis had been placed on the need for relevance in curricula and a closer articulation between school and employment. The general field of the humanities had also been highlighted. The Raising of the School-Leaving Age Project was accepted as a major priority for the Council with the aim of redeveloping the core curriculum for the whole of the five years of secondary education for the general run of pupils.

The second was Project English. Here again a national report, this time of the late Secondary Schools Examination Council on the examining of English language, had highlighted curricular problems needing attention.

The third was the Sixth Form Project. For some time there had been agitation for the broadening of the curriculum for pupils over 16 whose educational destination was the universities and other institutions of higher education. Criticisms had been made about the intense degree of specialization, beginning for many pupils at age 13 or before, and considerable progress had been made in introducing General Studies dealing with social and cultural issues as a counter-weight to it. The Council here was putting its weight behind a wheel already beginning to move forward, adding its own impetus, and clarifying the direction of movement.

Inheritances from the Secondary Schools Examinations Council

But this is not all. The Council took over the functions of the Secondary Schools Examinations Council at a crucial time. The Examinations Council was in the middle of launching a new public examination, the Certificate of Secondary Education (C.S.E.), designed for all secondary school pupils of average and above-average ability, from the 40th to the 80th percentile and above, though the upper 20 per cent were already catered to by the long-established General Certificate of Education (G.C.E.). However, the upper end of the C.S.E. was to be calibrated with the G.C.E. Moreover, the Certificate of Secondary Education was to be an examination controlled by teachers, through the Regional Examining Boards, with three modes of examining, the third of which was the right of schools to conduct their own examinations. At the same time, the examination was to have national currency no matter which board conducted the examination or which of the three modes was used.

This presented the Council with a formidable technical problem. All our conventional ways of ensuring a common standard in examinations, through panels of subject teachers and experts who scrutinized syllabuses, question papers, and samples of scripts, ran counter to the full control of the examination by teachers, and ran counter also to the right of schools to examine their own candidates on their own curriculum.

Furthermore, how could many hundreds of teachers be asked to conduct a public examination for the first time in their professional lives with little knowledge of examining techniques? There was thus the job of tactfully guiding their steps.

The Results to Date

Systematically, this range of problems has been tackled. Techniques of examining in many subject fields have been exemplified in the reports of study groups, most of whose members were practising teachers and members of the local and national inspectorate. These reports are among the Council's first publications, the Examinations Bulletins. There are some fourteen published and a further six or eight on the way. It is in this series that you will find a definitive appraisal of the pros and cons of multiple-choice versus essay-type examinations by Professor P. E. Vernon. And among the Bulletins (No. 5) you will find what I believe to be a unique application of quality-control techniques to the problem of moderating school-based examinations. You will also find a critical appraisal of three methods of examining mathematics supported by a mass of statistical data, as well as the most advanced study yet undertaken anywhere of essay marking.

The major problem of national comparability for the C.S.E. and the G.C.E. examinations, with some twenty-one Examining Boards working independently, has also been solved by a sophisticated adaptation of regression analysis and the use of tolerance limits. This technique is at the moment being operated for the Council by the National Foundation for Educational Research (N.F.E.R.).

In essence, what has been achieved through the Comparability Project in the field of examining is an example of local freedom combined with national order and standards. The possibilities of lifting the weight of examinations from the curriculum are now a practical reality. The way forward—for the schools to take a grip on what they teach and how they teach it—is open to an extent never before experienced.

How the Council Works on a Problem

It is in the field of examining that one can at present best see how the Council sets about its work. The Council seeks to work out practical problems with teachers and to provide them with technical support. At the same time, problems of a high order of technical sophistication are remitted to research workers. The research workers are free to work toward solutions within the general framework of the Council's broad purpose. Indeed it would be true to say that the Council has been instrumental in providing a powerful stimulus to educational research throughout the country as a whole, as well as calling on the research capabilities of statisticians, social scientists, and academics from many disciplines.

The Council's Researches and Studies

At the heart of each of the Council's three major projects is to be found a series of pertinent researches and enquiries. Thus Project English calls for, and the Council has commissioned, basic, fundamental research in language and communication. These researches are long-term. Their aim is to provide a new springboard for the teaching of English some years from now.

Related to the Sixth Form Project, a study is to be made of the contemporary history and assumptions which provide the beliefs on which education at this level tends to be based. Similarly, in the Raising of the School-Leaving Age Project, researches and studies are called for and have or are being commissioned. Some, the Council hopes, will throw more light on the interaction of personality and school performance, on the attitudes of pupils to educational treatment, on how courses are planned by teachers and their objectives conveyed to pupils, and on the best way of utilizing educational technologies such as programmed instruction and visual and other teaching aids.

Working with the Teachers

But around these nuclei of researches and studies is the here-and-now commitment to work out with teachers, in local and regional curriculum centres, solutions to the immediate problems facing the whole education service. This is the demand for more up-to-date and better science and mathematics teaching at all levels; for the more effective utilization of the mother tongue and the intellectual, conceptual, and personal growth which runs with it; and for the understanding by young people at a higher level than ever before of social issues and personal morality. Teachers cannot wait for the findings of research. They need to be brought into the main stream of change now, and in a way which respects their professional integrity. After all, practising teachers have as a group been more responsible for past changes in educational practices and for raising the level of educational achievement than has any other group. These changes have not been inconsiderable, and in the last analysis it will be this sort of change which counts.

The Strategy of Salients and Probes

The Council is going about its job by what one might call "the strategy of salients." These are the three major projects and the work in the examining field. Each salient is being pushed out at two levels: the levels, if you like, of action research and fundamental research.

There is also much more, but it is less tidily organized and represents another aspect of the Council's strategy: "the strategy of probes." There are many of these, ranging from a fundamental evalution of the initial teaching alphabet as a vehicle for teaching reading to an operational study of how best to introduce teachers to the nature of the problem facing adolescents when they leave school for work. Figure 4 shows the variety of curriculum projects being worked on.

There is also a host of studies being conducted jointly by the Council and major government departments, with the Confederation of British Industry, as well as with individual schools and groups of teachers, not to mention the Council's sponsorship of major national conferences.

Within a month from now, the Council will mount a Conference on Education and Social Change, a conference which will look at the nature of our theories about society, about personality, and about education at as high an academic level as we can muster. It will involve philosophers, sociologists, demographers, psychologists, and educationalists.

Relationship to Other Bodies

In fact, the Council's capabilities for changing the face of English education are considerable. If one looks at the range and number of institutions and agencies which the Council has involved in its work, one can see that the work force and drive available to it go far beyond the modest size of its staff (see Figure 5). The readiness to devolve from the centre outward at every level is one of the Council's salient characteristics and, I believe, strengths.

As you can see, more than half the English universities are undertaking work for the Council; so is our major national educational research agency, the N.F.E.R. A number of government ministries are involved, not to mention almost all Local Education Authorities. Add to these the Council's association with the Nuffield Foundation's curriculum development work and you have a major investment in curriculum reform, at least for us.

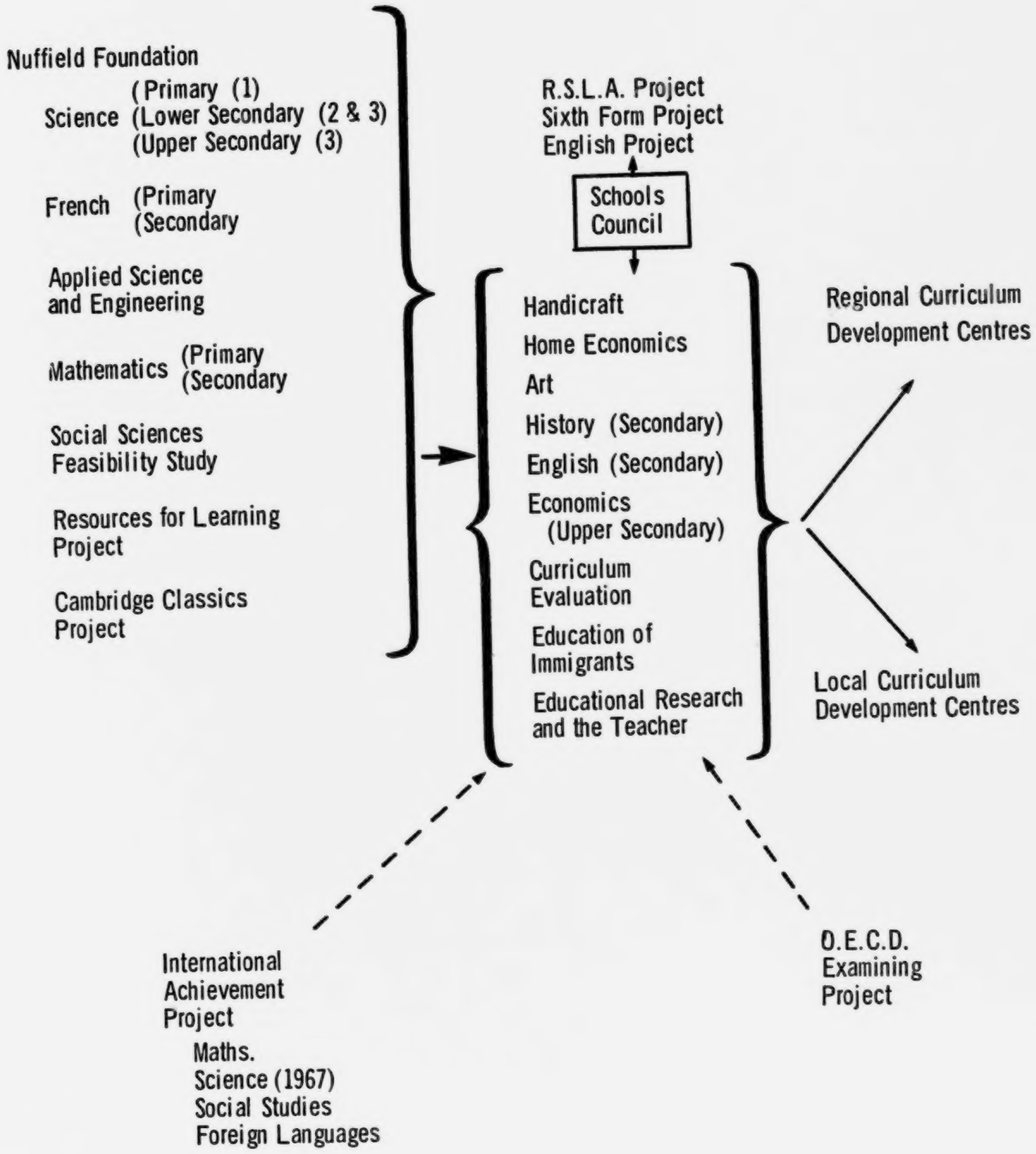
Nuffield Foundation
Science (Primary (1)
(Lower Secondary (2 & 3)
(Upper Secondary (3)
French (Primary
(Secondary
Applied Science
and Engineering
Mathematics (Primary
(Secondary
Social Sciences
Feasibility Study
Resources for Learning
Project
Cambridge Classics
Project
R.S.L.A. Project
Sixth Form Project
English Project
Schools
Council
Handicraft
Home Economics
Art
History (Secondary)
English (Secondary)
Economics
(Upper Secondary)
Curriculum
Evaluation
Education of
Immigrants
Educational Research
and the Teacher
Regional Curriculum
Development Centres
Local Curriculum
Development Centres
International
Achievement
Project
Maths.
Science (1967)
Social Studies
Foreign Languages
O.E.C.D.
Examining
Project

Fig. 4. — Major curriculum studies.

Does the Council Succeed?

Having devoted some time to elaborating for you the purpose, structure, and functioning of the Council, I want now to turn to the question of whether the Council in fact works, and to its strengths and weakness, at least as I see them. This is almost like asking an Englishman if cricket is a good thing. The Council is, as I pointed out earlier, a very English institution. It is trying to get the best of all possible worlds! It is founded on the principle that *the* significant agent in English

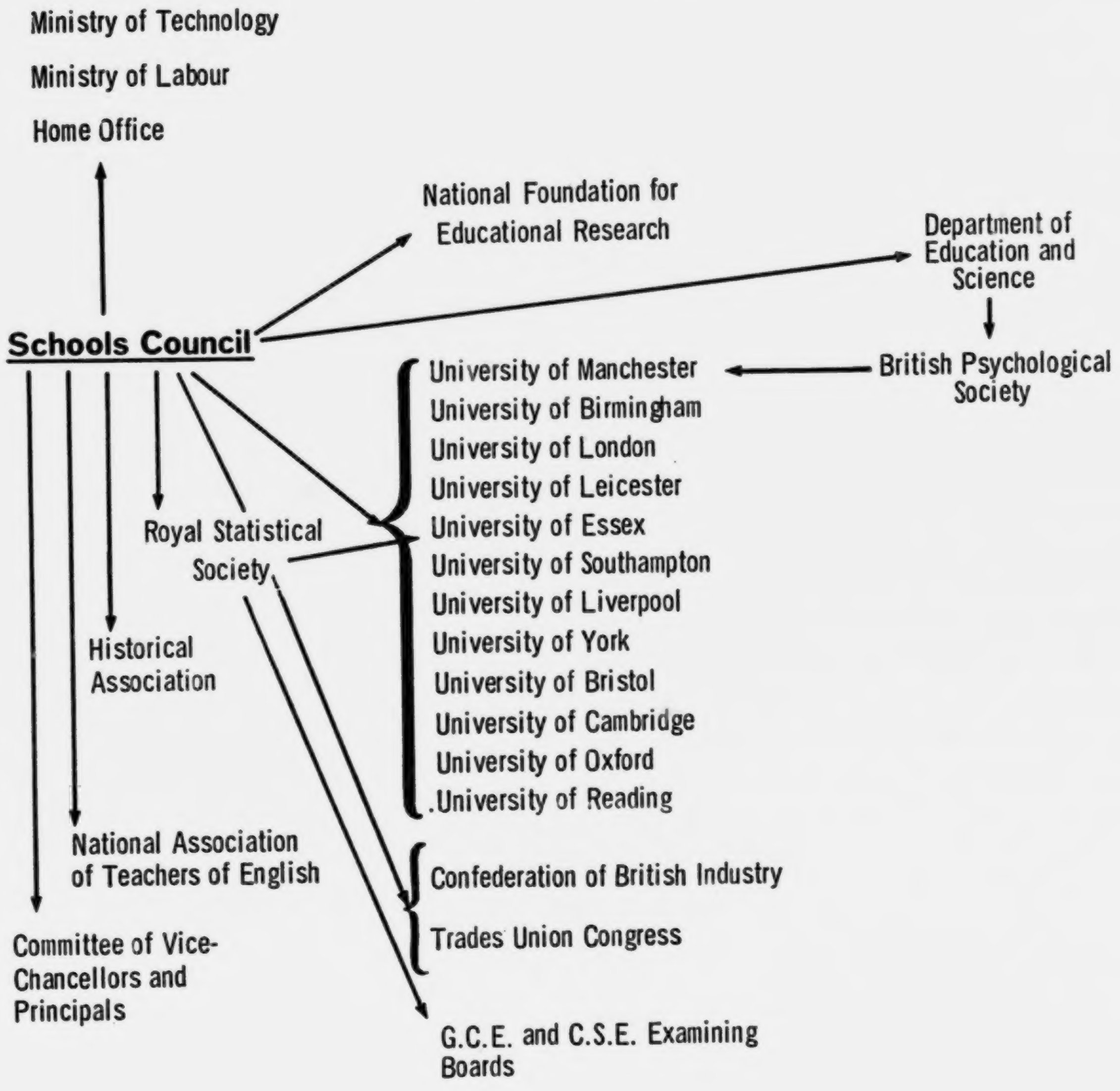
Ministry of Technology
Ministry of Labour
Home Office
National Foundation for Educational Research
Department of Education and Science
Schools Council
British Psychological Society
University of Manchester
University of Birmingham
University of London
University of Leicester
University of Essex
University of Southampton
University of Liverpool
University of York
University of Bristol
University of Cambridge
University of Oxford
University of Reading
Royal Statistical Society
Historical Association
National Association of Teachers of English
Committee of Vice-Chancellors and Principals
Confederation of British Industry
Trades Union Congress
G.C.E. and C.S.E. Examining Boards

Fig. 5. — Institutions and agencies conducting commissioned researches and studies (1966).

education is the practising teacher, and it is against an awareness of his perceptions — their strengths and limitations — that the Council's decisions are taken. These decisions are taken by committees, many of which have cross-membership and are put into operation by a bureaucracy whose main experience has been in one or other government department. Moreover, the flavour of these decisions must smell right to what appear to be major representatives of the established central administration, the Inspectorate and the Local Education Authorities. And all this has so far been backed by a mere $300,000 of operational funds over and above working costs.

The literature of bureaucracy, of committees, and of power in our kinds of society suggests that the most likely result of such an approach is an agreement to make a great show but in effect to do nothing. However, the literature fails to take into account the value systems of the individuals concerned, their higher loyalties. The prevailing concept of education in England is that it is a means of affording to young people access to a quality of living, both personal and social, which is markedly independent of society's immediate needs for utilizable human material, whether this is socially or economically sensible; a quality of living related to distant goals, to who they are and where they are going as human beings. In essence, I suppose, this is part of the Englishman's ideology, his sense of fair play applied to his children.

At any rate it is, I believe, something like this which animates the Council and has created the conditions for loyalty to the Council which overshadow representative loyalties. Thus the Council has been able in two years to gain the co-operation of very many individuals and agencies in a common enterprise, to identify the nature of some of the salient problems facing education, and to point the way to their probable solution. In doing this it has given offence either directly or indirectly. By implication it has criticised the Department of Education and Science for failing to maintain the resources of research at an adequate level, the Inspectorate for not bringing its role up to date, the Examining Boards for their lack of technical sophistication, the Local Education Authorities for their timidity in developing operational research, the universities for their seemingly studied disregard of their effect on the schools, and the teachers themselves for not jumping more professionally to the needs of the times. Finally, it has cast considerable doubt on the "report," whether of a Royal Commission or a National Committee, as an agent for the reform of education in the twentieth century.

In brief, the Council has accepted its birthright: to be independent of *all* its parents. But some price has had to be paid. These are the inevitable bruises of any two-year-old who comes up against established social forces. The pace of Council activities will have to slow down in the immediate future, if only to let the teachers catch their breath and the Local Education Authorities take a closer grip on the management of curriculum development work. Moreover, a strategy of salients and probes leaves behind much filling-in and consolidation to be done. Lines of communication get extended and sometimes tangled. It is here that a major weakness can be seen in the Council structure. Some time will need to be spent in the immediate future on establishing a more efficient communications system.

But a greater issue by far, at least to my mind, is the extent to which the Council will continue to be able to challenge the fundamental assumptions on which much educational practice is based — assumptions about what makes an efficient teacher, what makes an effective curriculum, and what knowledge is of most worth — and out of this challenge help build a more effective theory of education.

In England and Wales, the Council has raised the status of educational research activity. At the same time it has made it plain that it is not for the educational researcher alone to re-draw the purpose and practice of education. This must be a common enterprise, even if this means that judgements will be made without a full understanding of the available evidence, that they will be made on the basis of "innocent faith," and that their consequences may not be followed through with all the rigour that modern social science and technology can command. On the one hand, the Council does not seek to impose on education in any way the infallibility of faith and, on the other hand, it seeks to protect it from the necessary scepticism which energises science. It seeks, if anything, to hold these poles in tension and so discharge this tension in pulses which make better educational practices possible in the school and the classroom.

Such an enterprise as this calls for a new breed of men. It calls for men sufficiently familiar with all the possibilities of the modern social sciences, with an awareness of the nature of values, and a close command of how to get things done in the world of practical affairs. Such men are part scientists, part philosophers, and part administrators. Thus, quite dramatically I believe, the Council has identified the kind of human agent which my country needs to take it along the next stage of educational advance. The basic issue then is: do we have such men in sufficient strength for the Council to remain for the foreseeable future a vital force in the redevelopment of the curriculum of our schools? When our social scientists, and I class myself as one of them, have done analysing the nature of human actions and institutions, what will matter is whether we have the men to do the job that has to be done in the peculiarly English way that English society demands. This is a way of doing things which may not transplant. It is incapable of simple description; it is apparently self-contradictory, idiosyncratic, and frequently shows signs of drawing its logic from *Alice in Wonderland*, but for us it may well work. It is *our* emerging strategy and structure for educational change.

On the threshold of its third year, the Council looks forward to a larger bank account (some $3.3 million a year by 1970); to a simplification of its committee structure, and to the regretted departure of three of its major officers — two of its Joint Secretaries and the Head of the Research Department — who have served their three-year terms. The Council looks back on more than a publication a month for the past two years, to the active involvement in curriculum and examinations development work of more than 10 per cent of the country's teachers, 50 per cent of its universities, and many of its major institutions and agencies. It looks back with regret that its work has not received quite the polish that it merits, nor has it always been communicated with efficiency. It recognizes that many of its movements were random; that its perception of the problems facing it was not always entirely accurate; and that its very existence gave offence from time to time to one or other of its parents.

But what stands out most is that its Englishness has confirmed the freedom of the teacher in curricula matters and yet has established both the need for education in England and Wales to update itself and a functional structure for satisfying that need. Just how viable this means is, only the future can tell. But some clue to it may well be seen in how quickly the new officers become agents of the Council's purpose and how this purpose in operation becomes less a reaction to the moment, the immediate, and the pressing, and more a strategy planned to serve the architects of educational advance. Some response to the here and now there must be, but it ought to be made in relation to a future goal. Present actions can so easily limit the degree of freedom available to us tomorrow. Do not mistake me. I am not advocating caution. On the contrary I am advocating a strategy which will take curriculum reform into the heart of the battle. In our kind of society only the people can determine the nature of a future goal, and the people determine it through political action. It is, I believe, in the fire of such action that curriculum reform will forge the tools of its trade. After all, the curriculum is concerned with shaping the kinds of people we want in our society, and ascribing roles for them to play. It follows then that some of the energy available to the Council will need to be devoted to taking issues beyond the school, outside the province of the educators, and into the hearts of the people.

These final points are personal ones. But I am sure that they are necessary ones if the Schools Council is effectively to benefit from and to contribute to what is an international movement, that of curriculum reform.

Finally, I should like to add a postscript. Recently the news broke that Sir John Maud, Chairman of the Schools Council, would be resigning to take over the chairmanship of the Royal Commission on Local Government. This means that yet another one of the Council's major offices is falling vacant. This could be traumatic for the Council. But it might well be a trauma which launches the Council forcibly out of infancy into youth. That its youthful years may well be stormy is already being predicted in the national press. Writing of the kind of successor wanted to Sir John Maud as Chairman of the Council, *The Guardian*, one of our top three newspapers, says, "a man of keen ideas and high prestige who can fight on the barricades for [the Council's] developing range of bright educational reforms." Thus curriculum reform, at least in my country, is considered to be as revolutionary as battles to be fought and won. The Council's emerging strategies will need to take this into account.

Commentary

T. C. BYRNE
Deputy Minister of Education, Province of Alberta

Listening to Dr. Taylor's paper has been a delightful experience, particularly since I recently had the privilege of spending two days with the Schools Council and the opportunity to speak with Dr. Taylor about his work. It seemed to me that I was fortunate in being introduced to the study of British education through the Schools Council, because this organization appears to be central in the debate going on in English education about what changes should occur. It seemed to me as well that, starting with the Schools Council, one could move out and try to understand the various structures of English education and their various procedures. I don't think anybody from North America could ever hope to understand English education completely, certainly not in the time I spent there, and Dr. Taylor has indicated that again today. But let us say that I looked at it from my North American vantage point and saw certain things. These things may not necessarily be the reality of the situation; however, considering both my experience of visiting the Council and what we have heard today, I would like to make the following comments.

When I visited the Schools Council, there were two questions I had in mind to which I hoped to find answers. One concerned the re-structuring of the curriculum development program in Alberta. We have been concerned about this for some time. How do you approach the business of developing curriculum or giving curriculum leadership in a way different from what we have done traditionally? The second question in which I was interested was this: How do you make research more effective? How do you make it more meaningful to the teachers in the classroom?

Although I was seeking answers to these questions, what I received was much different. It might be called an introduction to English education. This introduction was in one way an explanation of how the Schools Council came into being, and why it is uniquely different from what we have in Canada. As someone explained to me, the basic unit in English education is the school, and this makes the headmaster a very important and powerful individual in English education. Now I suspect the range of power exercised varies from school to school and from individual to individual. No doubt there is a continuum in the exercise of power in these schools, but basically it would seem to me that the unit of decision-making, so far as deciding what is to be taught and how it is to be taught, is the school; at least, this is what I was told.

I suppose that if we were trying to describe a unit that was comparable in Canada we could say the province was the basic unit in education. We might say this shouldn't be. We might say that this situation is gradually being altered, that the central position of the province is being nibbled away by various forces. But essentially, traditionally, and historically, the province is the unit. Thus, in England you have a thousand systems, or whatever it is, and in Canada we have ten or eleven. This necessarily gives us a different approach, and consequently curriculum has traditionally been a government function. I understand that in England the government tried to move in. The Department of Education and Science attempted to give leadership comparable to the kind of thing we have in Canada, but it was apparently not received with any great confidence. Now, it may be that because of this lack of confidence in the civil service approach to educational planning, and the suspicions that teachers and their unions might have about centralized planning, the Schools Council developed as a modification acceptable in British society. In any event what I saw in the Schools Council was not dissimilar to the curriculum organization that we have in the provinces. It had the same complexity of committees — and this I assure you provides some problems to people who are concerned about it. We have so many curriculum committees in Alberta that we number them and file them consistently because they sometimes disappear on us! I saw this sort of thing developing in the Schools Council, and I suspect they were as concerned about it as we are, but they will probably deal with the problem more effectively. I think Dr. Taylor indicated that reorganization of committees was something that gave the Council some concern.

Curriculum in Canada is very close to the political arena. Directors of curriculum are concerned with development of teacher-proof devices which are sent out to the schools; we have examinations which police the teacher-proof devices; we have inspectors who go out to do a further job of policing. Our departments, directors of curriculum, chief superintendents, deputy ministers — the whole gamut of civil servants — are pretty sensitive to the outer ranges of curriculum decision. Nobody says that you shall not put a course of this type into the curriculum. No one has to. You are sensitive to the limits to which you can go. You can anticipate where it is dangerous for any government department to institute change in its curriculum program. Those of us who work in this atmosphere get pretty adept at it, but I suspect that you in England are free of this, that presumably you don't need to worry about political decisions in development of curriculum. Presumably you can strike out in a direction which would not be accepted politically because you are independent. And yet are you independent? Where do you get your money? Who supports you? This is an intriguing thing about English society. Here is a completely independent Council, supported by government money and yet independent. This could not happen in Canada, but it is a tribute to British society that it can happen there. No one from North America can possibly understand how it's done.

The Council did not provide me with answers to my curriculum problems. I am sure that answers to the curriculum planning and needs of English education reside there, but there is nothing that we could carry over into our Canadian system. I suspect I was naïve to expect that there would be. This Council developed out of the structure of British society, as an answer to English problems, and it cannot be translated. I was exhilarated by the research aspect of the Council because my eyes were opened to a different culture. I had hoped, however, to find some answer to this question of development, something about the intermediary between the researcher and the field. In England such intermediaries, I believe, are called Diffusion Agents, or D.A.'s (D.A.'s in Alberta are District Agriculturalists. I think maybe there is an identity in common there.) Anyway, I was hopeful. I had read somewhere about "mandarin" research; someone had mentioned that research should not be of the mandarin type, and I associated the comment with a man from the Schools Council. I inferred that this comment meant the Council would tackle the problem of making research effective in the classroom. It would use the engineering approach to research. Instead, I found that Council members had eschewed research, that the Council is not a research agency. It is an agency for directing research funds in different directions. I am sure that this activity fits in with the concept of service that is associated with the Schools Council.

I think that in Canada we need this intermediary between the researcher and the field, if we are going to build councils; we need this aspect built in to a much greater degree. During this conference I have begun to understand better the role of this developer, this middleman. He is a person who can in some way take the basic research, and inventions derived from it, and apply them in a practical situation. He can, if you like, bring the ideas from the classroom back, so that the basic researcher, or the practical or applied researcher, is doing something that is much more effective and realistic. In this way the creativity of the classroom teachers can contribute to these inventions. Now this kind of two-way flow is something I think we need to develop in Canada, and I had hoped to find it in the Schools Council. Although I did not find an answer there, I did find instead a tremendously imaginative approach to the solution of problems that are uniquely English.

Commentary

H. L. STEIN
Director of Graduate Studies, Faculty and College of Education,
University of British Columbia

Dr. Taylor's paper is the second example we have had at this conference of an illustrative case study of a method of conducting various kinds of research and development on a national scale. The first example was that presented by Dr. Holzner, who described, in full detail, the Research and Development Center program in the United States. Dr. Holzner stressed the magnitude, the financial support, and the underlying ideology of the Research Center program, implying that "the cause of educational improvement should be a matter of national political and of general intellectual concern."

The second example is the Schools Council in England which, according to Dr. Taylor, represents the major sources of power in English education. It has representatives all the way from the Department of Education and Science "down to" the classroom teacher. The Council's major endeavours, as far as research and development are concerned, are in the fields of curriculum and examinations. Basic and applied research in other areas of education are left to the universities and other interested bodies.

Interestingly enough, the organization of the Schools Council for the task it has to perform seems to be typically English. It reflects the usual English policy of democratic representation in a national body whose function is, in the main, advisory. Integrating as it does the research interests of the Nuffield Foundation, the organization of Her Majesty's Inspectorate, the Department of Education and Science, and the Local Education Authorities, it is in a position to foster research without actually having to carry out any specific projects, except possibly in the examining field. Nevertheless, because of its wide representation it has recourse to a wide variety of organizations, from the classroom teacher upwards, for the conduct of research and development.

Dr. Taylor's paper also illustrates the typical ideology underlying English education in general. As the Schools Council manifests its concern for curriculum revisions to accommodate the changing pattern of culture, at the same time it is careful to reflect the typically English philosophy of education that the schools exist for the purpose, in the main, of producing well-educated and adaptable persons who can cope with the changing economy. A high degree of specialization is not acceptable in the typical English secondary school, regardless of whether it is traditional or modern.

As a model of an agency for research in education, the Schools Council may be of interest to OISE for the reason that it reaches out to all levels and areas of educational endeavour for enlisting action in research and development. To be sure, OISE will not restrict its research interests and endeavours to curriculum and examinations. It may, however, take note of the Council's strength in making use of co-operative efforts on the part of many potential research facilities. However, since OISE is primarily a provincial body, and probably concerned mainly with research problems on a provincial scale, the English model may have only limited value. OISE will, of course, be interested in basic problems in education which may have more than local importance. In these cases the English and the American models may have some relevance. Just as the Schools Council has access to a considerable work-force and to a variety of talents in the field of educational research, so might OISE, in addition to its own staff and graduate students, reach out into the field of practice for solutions to both fundamental and applied problems. Specialized agencies in the provincial field, such as the research departments of school systems and municipal authorities, to say nothing of the research interests of universities other than Toronto, together with their teacher training departments, may have much to contribute to the study of educational change.

DAVID C. MUNROE
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Educational Planning as an Aspect of Social Change in Quebec

Without delving too far into history, I think we can recognize the main elements in the educational and social policy of today, in the period between the two world wars. In 1919, you may remember, statesmen were concerned with making the world safe for democracy, and it would appear on the surface that the three principal leaders at that time, at least, were eminently qualified to re-fashion democracy to meet the changing concepts of the new world. Wilson had been a professor of politics at Princeton before becoming president of that institution. He had been elected Governor of New Jersey before being elected President of the United States, and one might imagine that he was eminently qualified to interpret the message of American democracy in new terms for the twentieth century. Clemenceau, a doctor by profession, had been very much influenced by the writings of John Stuart Mill. He had lived for three years in his early manhood in the United States, observing American institutions and the practice of democracy in North America, before being elected in 1870 to the French Chambre des Deputés, where his distinguished career carried over half a century. And Lloyd George had been one of the principal artisans and architects of parliamentary reforms of the first decade of this century in Great Britain.

One might, then, have expected that a great deal would be done to re-structure the democratic pattern of government; and yet, looking back, one sees the extension of the franchise to women as perhaps the chief accomplishment of this period. I think it would be correct to say there was very little change in the basic concepts of democracy. It was something to be extended rather than altered.

Meanwhile, the wheels of social change had been set in motion. Cracks had appeared in the class structure of Europe; the open society of North America was obviously both powerful and prosperous. New responsibilities were being assumed by governments, rather timidly, it is true. Unemployment insurance, which had been adopted in the United Kingdom before the war, was now, as the dole, used to help the unemployed during a series of depression years; and it is generally felt that this probably staved off revolution in the United Kingdom. At the same time, it is well to remember the impact of the New Deal in the United States in the 1930's, the first years of Roosevelt's presidency. It would be fair to say that a certain element of social responsibility was slowly gaining acceptance to replace the old ideas of laissez-faire and rugged individualism. The most profound of these social and political changes, however, had been taking place in Russia, where in

1917 the Communist Party had come to power. It is perhaps no accident that there also we find education and planning being given pre-eminent attention.

In the western democracies, there had also been concern for education, as evidenced in the Fisher Act in Britain and the program of Les Compagnons de l'Université in France. One finds here an idealism which was rather dormant throughout this period, and certainly in terms of the Fisher Act or the Ecole Unique in France, never fully realized. In Russia, on the other hand, there was a massive attack on illiteracy. Education was accepted as an agent of social change, an instrument for use in a political sense; and when one considers the dominant role given to education by Lenin, one finds here, certainly, an acceptance of education as one of the top priorities of public policy. Education was one of the key factors in the planning which developed under the leadership of Stalin. The first Five-Year Plan, as you may recall, was put into action in 1928, and a good many of us of my generation can remember the scepticism with which this was viewed in the western world. It was an approach which seemed to threaten free enterprise, and for that reason, was suspect to many of our leaders. I think it is only fair, also, to mention the developments of the Hitler régime in Germany at this time. Just a week ago, I picked up a copy of *Mein Kampf* again and read through the thirty or forty pages which are devoted to education. One sees there the firm realization that education can be used for political ends; one finds an almost shocking, ruthless attitude toward the development of educational plans to suit the needs and particular views of a particular group of determined men. Throughout this pre-World War II period, it seems to me, the thoughts in the democratic countries, at least, were largely concerned with trying to get back to normal, trying to get back as quickly as possible to the patterns of the past, to the patterns of the nineteenth century. These patterns were eminently comfortable and organized; the life looked much easier, much more settled, with values much more clearly in mind than, perhaps, it was realistic to believe.

The danger of inaction and indifference came to focus, to a very great extent, in the war years 1939-45. It is no accident that during these years, governments were preoccupied with change, with preparing future governments to accept new responsibilities, to re-think social policy, to re-evaluate the basic concepts of public policy. And so, in the United Kingdom, we have the shaping of the Butler Act, the Beveridge Report. In France we have, even while the French government was in exile, the appointment of the Langevin-Wallon Commission which had a report ready at the end of the war for the reshaping of French education. In the United States we have, among many other things, a number of restatements of policy by the Educational Policies Commission. In Canada, the Parliament of that time appointed an advisory committee on reconstruction which looked into various aspects of Canadian life that needed to be given new attention. The report by Leonard Marsh on social development was one aspect of this work, and I think we might say that the plan for the education of veterans was also a result of this exercise in reconstruction. All of these things, then, focused attention on education in a rather new and very urgent way.

It is impossible here to examine fully the evolution of democracy or of social policy during these years. All I will do is enumerate some of the forces and factors which must be taken into account as we look at this change in our thinking: rapid communication, the use of mass media, the development of science, the impact of technology, the move in most countries toward urban living, the move toward equality among racial, linguistic, national, and religious groups. The last-named trend has been manifested in many ways; I will mention only the development in the last few years of the movement we know as Ecumenism, largely inspired by the Vatican Council and the bold act of Pope John XXIII in convening it. There are many manifestations, then, of these reassessments of democracy, of social needs, and of society as a whole, and it is in the light of these that I want to pass on to some consideration of education and planning in relation to them.

The concentration of these revolutionary forces compels us to revise our views of the value, aims, and perhaps the structure of education. An example is the need to think in terms of education for all, instead of education for the few. As one sociologist has pointed out, until the beginning of this century it was probably impossible for any nation to afford to educate to the limit of their ability more than a very few of its citizens. Now we are faced with the realization that no nation can survive unless most of its citizens are educated to the limit of their ability. This is an economic fact.

Research in psychology has taught us once again that we need to understand and reappraise the whole field of human abilities, that intelligence is greatly influenced by environment. Recent studies in Sweden make it clear that probably, given normal family, schools, and social environment, at least 50 per cent of the age group ready for post-secondary education could qualify, even on present standards, for continuing their studies. This would greatly raise the numbers pursuing education beyond the secondary level. Again, I think education is seen now as a continuous activity that carries on through life. I remember that in a copy of *Esprit*, that valuable journal of education in France, the comment was made that up to the present many people have thought of education and life as divided into three stages: the period of learning (childhood), the period of action (middle age), and the period of decay (old age). The point was made that this view can no longer be accepted, that in an active society, in a democratic society, we must be prepared to see people carry on their studies, carry on the learning process, as long as there is life. Finally, I think we have come, in the last few years particularly, to see education as not necessarily a consumer service, but as an important agency in economic progress. All of these reappraisals of educational services, aims, and purposes undoubtedly pose many problems. The expansion of our educational systems is one, and this immediately brings us face to face with shortages which are grave and of important consequence — shortages of teachers, of buildings, of equipment, and of administrators. The moment we come face to face with shortages, it seems we are faced with the necessity for planning.

Now planning, in my view, involves at least three aspects: (1) clarification of objectives (trying to understand exactly what we want to do); (2) an inventory of resources and needs; and (3) an acceptance of priorities. To develop such a rationale for the reform of education, Sweden appointed a royal commission in 1941, which has been working almost without interruption up to the present, on a series of studies of different levels and aspects of education. It has prepared a formidable battery of reports on various aspects of Swedish life and educational policy. When I visited Sweden in 1963, I was very much impressed with the gradualness of this evolution, as well as with its effectiveness.

France has adopted a different approach to planning, related very closely to industrial growth. Over the past fifteen years the French have gone through the pattern of five successive plans. In the United Kingdom, there was at the outset a certain resistance to planning. It is true that the Butler Act determined certain priorities and objectives by saying there should be secondary education for all. Even as recently as 1951, however, a government was elected in Britain, one of the main points of whose platform was the reduction of expenditures on education. This attitude has changed gradually during the last decade, and one finds a series of reports — the Crowther Report, the Newsom Report, the report of Lord Robbins — which have helped put into form the aspirations of successive governments, political parties, and the public as a whole, in terms of eduational growth. In Canada it is important to realize that over this same period there have been royal commissions on education appointed in every province, with the possible exception of Saskatchewan where a royal commission on rural problems devoted a good deal of its attention to providing education for rural communities. These commissions were perhaps an element in the planning process, an element in determining objectives, and certainly an element in making an inventory of the resources and needs. As I see it, the business of a royal commission is not necessarily to establish priorities, but to provide a blueprint which gives the public and successive governments an opportunity of choosing desirable priorities and developing a suitable rhythm of progress.

Perhaps the most important, most interesting, and most unusual of all are the activities of such international organizations as UNESCO, the Organization for Economic Cooperation and Development with its centre in Paris, and the International Institute for Educational Planning, again with headquarters in Paris. Here, then, is evidence of official recognition of the need, not only for education, but for some form of planning in education.

Now I notice that one of the purposes of this conference is to examine existing models in Britain, the United States, Ontario, and Quebec. That is my justification for devoting the remainder of my address to describing developments in Quebec.

I should preface what I am going to say by a brief review of conditions in

Quebec during the 1950's, because I think we need this background to appreciate the changes which have occurred. Quebec's system of education, as it developed in the 1950's, was an accumulation of a century's growth. I have no time to examine this in detail, but Chapter I of the first volume of the Parent Commission's report includes a brief historical statement describing the evolution of the system up to the 1950's. The chief characteristics, I would say, were these: There was provision for dissent in the public school system, which meant that as this system grew up over the years there were two almost independent systems of public education. An unusually large number of private institutions existed, and it is clear that at this time they dominated higher education entirely. There was no government responsibility in this regard. I think it would be fair to say also that government responsibility up to this time had been considered for nearly a century as indirect and supplementary. The government was expected to fill in gaps, help support projects already put in motion by private institutions, and not take the initiative in promoting or directing educational policy. The result was that the school system, as I pointed out, was divided between two almost independent sections: Roman Catholic and Protestant, with no direct provision for people who were not of those two faiths. Higher education was entirely provided by private institutions. Technical education was largely provided in non-confessional government institutions. The government was committed to an increasing amount of support for all parts of this structure.

Corrective measures were envisaged in the 1950's by the authorities then in power. In 1952 the Roman Catholic Committee of the Council of Education set up a special study committee for better integration of the institutions within its jurisdiction. Unfortunately, most of the twenty-nine recommendations were not implemented immediately. Perhaps this was partly due to the fact that the Royal Commission on Constitutional Problems was appointed in 1953 to study problems of a constitutional nature between Quebec and the federal authorities. It is interesting that over half of the briefs presented to this Commission dealt with education. The third volume of its report was directed to the problems of education, and it recommended that a royal commission be appointed to look into the problems of education generally.

During the 1950's two new universities were founded with government charters: the University of Sherbrooke and Sir George Williams College (now University). These and other private institutions, particularly universities, were given substantial government help. I think it is fair to say that our universities at present must be classified as semi-public institutions at least, since the proportion of their budget which is drawn from public funds is mounting every year and is comparable to that of other provinces.

In 1961, the Government adopted what was called a Magna Carta of Education. Actually, the provisions of the acts which are classified in this group had been under consideration for some time: compulsory education to the age of 15, free education to the end of high school, the right of parents to elect members to school boards, and the introduction of statutory grants for elementary and secondary education. In the same year, a royal commission of inquiry, the Parent Commission, was established. It has just completed its work, and the last of the five volumes of its report was presented to the Government in May, 1966. The full report will soon be available in both English and French. This document attempts to present the needs of education as the Parent Commission saw them, and to offer a blueprint (but not a timetable) of the types of reforms that could be introduced. I think the report has been given a great deal of attention by the public and voluntary bodies throughout the province, and, we are happy to say, has aroused interest in other areas.

A new administrative structure, proposed by the Royal Commission in its first volume, was established in 1964, and provides for: (1) the appointment of a Minister of Education, with responsibility for all levels and types of education; (2) a Ministry of Education which acts as his executive arm; and (3) a consultative body called the Superior Council of Education, which offers the Minister the advantages of continuous contact with the public and the intermediary bodies (*corps intermédiaires*).

In this structure, the public is at the base as the final resort in terms of education. The continuous movement of ideas and suggestions of the public goes up through its intermediary organizations, which include professional groups, parents' groups, churches, and groups whose interest in education is vital but somewhat marginal, like trade unions and chambers of commerce. These bodies continuously pass their ideas on to the Superior Council of Education, which provides advice and forwards these ideas to the Minister, who may also generate ideas of his own about education. This structure will certainly provide a constant link with the Legislature. The Minister, at the centre, is in the position of decision-making. His decisions are handed to the Ministry to be carried out through the various channels of regional administration, such as regional school boards, and back down to the public again. In other words, there is a continuous flow from one side to the other, with the public at the base of the whole structure.

The Commission's report could be said to be emphatic on these issues. It recognizes the principles of democracy, and it recognizes them in two ways: not only has everybody a right to equal opportunities of education, but the public has a right to participate in decisions on policy in education. The report shows that the commissioners were conscious of social change in a rapidly changing society such as Quebec. It gives a central place to education in the public responsibilities of government, and it makes provisions for educational planning. Perhaps its most significant and original contribution is in planning, and I want to deal mostly with this question of public participation in planning. Education, as it is seen there, is a basic function of government, but the services should be decentralized and planning should be a co-operative process in which all levels participate.

This is in contrast to the pattern of administration in totalitarian countries. I remember visiting a technical school in Kiev, for instance. I met the full staff, and one of the questions I asked was, "Who plans the changes in your curriculum?" Well, this seemed to embarrass everybody. They never really thought about this, I guess, and the principal could not answer the question; nor could the vice-principal. He asked various members of his professoriat, and one after another simply looked confused. I tried to bring this down to a special case. I said, "Well, I don't know railroading very well, and I'm not perhaps completely familiar with the area of technology, but what would you do, for example, if in your railroad industry you were changing over from steam engines to diesels, and you had to put in a course for diesel engineers?" This puzzled them still further. Finally, the guide from Intourist talked to the principal and one or two others and came back with the answer that this would be decided by the Central Committee of the Communist Party at its meeting in Moscow. They made it clear that suggestions come from any school or any group that wants to make them, but the actual decisions are taken at the centre.

The idea of participation is fairly well expressed in a document which is soon to be presented to the Quebec Legislature. This is the first annual report of the Superior Council, a document devoted to the subject of participation in educational planning. This is one of the statements taken from the report:

> In the present social context, democratic participation in education cannot possibly result from a plan prepared by experts who work in isolation and depend only on statistics and abstract requirements. By its very nature, democratic participation must become the responsibility, recognized and undertaken by the public as a whole, a task wherein each will bring his contribution according to his experience and his ability. In education, more than in other public services, the state must demonstrate its understanding of the desires of its citizens, and it must constantly interpret and explain its policies, so that all may understand them.

Now, what are some of the instruments through which this kind of participation can be assured? I will give you a series of illustrations, the first one being the Minister's own interpretation of participation when the new law, Bill 60 as it was called in Quebec, was before the public. The Minister himself toured the large centres in the province to present a public dialogue, under the sponsorship of school boards, but with representatives from all the public, explaining the general pattern of the reforms he was proposing. This reminded me somewhat of the visits that Egerton Ryerson used to make up and down Ontario in the early days, when he was trying to make the public aware of the needs of public education. I only point out that this spirit is not yet dead. The minister recently did it again to popularize the ideas of regional planning. This obviously is one way the public may participate.

The Ministry of Education in Quebec has a Directorate of Planning, and it encourages consultative participation in two specific ways. First, it has set up a massive pattern of consultative committees which discuss education or, in some cases, develop plans which are then presented to the Ministry or to the Superior Council for discussion. This is a procedure that has been followed in the development of the four or five regulations for arrangements and structure of elementary and secondary school courses, use of examinations, teacher requirements, and development of the new post-secondary type of institution. These have all been conceived to some extent, and certainly discussed very generally, with participation of intermediate bodies.

A second very important means of consultation and participation has been the regional planning committees which were set up in all the regions. There are fifty-five of them, plus seven or eight English, which means approximately sixty different administrative units in the province. Each has its own planning committee, with participation from teachers' groups, private institutions, parents, school boards, and various voluntary bodies, such as labour unions and chambers of commerce. These regional planning committees were required to produce a plan for the development of education in their areas. Something similar was done in England after the Second World War, when each of the Local Education Authorities (L.E.A.'s) was asked to present a plan for providing secondary education. This was a useful exercise. I think that some of us felt that it was not too clear to these planning committees that their plans were being fully considered in the later stages, but it was an exercise which made them very familiar with the needs and demands of their areas. Some of the men here have, I know, participated in these regional planning committees, and I am sure they would testify to the amount of interest and activity which these generated. The Superior Council met with a few of these regional committees and found that there was an element of frustration if they felt their work was not being used or their advice not followed. Since there was danger of losing the interest of this group, the Council decided that its first annual report should include a section on participation in planning. We feel that it is fundamental that the public and its various organizations should understand better than they do now what the principles of democratic participation really are.

That brings me to the Superior Council of Education, a body which is perhaps unique in the structures of Canadian education. The Royal Commission was very conscious of the need for this sort of consultation. In other words, as we saw it, education was a different sort of government responsibility from road building, the application of justice, or even the administration of public health. It seemed that there should be some consultative body other than the Legislature which could take education as its particular domain. And so the Council is patterned to some extent perhaps on our old Conseil de l'Instruction Publique. In making recommendations for this type of institution, we were conscious of the existence of advisory councils on education in Great Britain; of the Hope Report recommending that there should be a similar body in Ontario; of the Cameron Commission in Alberta that recommended there should be a body responsible for this sort of independent thinking; and of a similar recommendation in a royal commission report in Manitoba. It was to meet these demands that the Superior Council was set up.

In the first place, I should say a word about its constitution. The Council is a body of twenty-four members, the chairman and vice-chairman being by law half-time appointees. It has its own budget and its own small secretariat. By law, the Council meets monthly, and usually the sessions last two days. It is nominated for a fixed period of four years, and members may have their mandates renewed once. Members are appointed by the government, but after consultation with a wide number of *corps intermédiaires*, so that all organizations interested in education are consulted about the personnel before nominations are confirmed. It is intended that this body should be independent to the extent that it can advise the Minister as it wishes, that it is not an appendage of the Ministry of Education (although it obviously must work in close co-operation with the Minister), and that it can use its own judgment in developing the types of study it may wish to undertake. According to law, it must advise the Minister on a certain number of matters which he is required to submit to it for advice. He is not necessarily obliged to follow the advice of the Council; however, five regulations which so far have been adopted were all referred to the Council for study, and in most instances the Council's advice was accepted.

The Council can accept suggestions or representations from any public body on any matter at any time, and may also conduct studies and inquiries on such subjects as examinations—on which it is working at present. Another study which it has been engaged in for the past several months is on the type of organism, the type of consultative committee, that should be set up to stabilize relations between the universities and government in terms of development and finance. These are two examples of the sort of problem that the Council has under review.

Perhaps the most interesting and vital power of the Council, however, lies in the requirement that it present through the Minister an annual report to the Legislature. The Minister has no foreknowledge of its contents and, as a matter of fact, it was a little embarrassing to find when the first report was ready that we didn't have a Legislature to present it to! The decision taken last week was that this document will now be presented to the retiring Minister of Education, M. Gerin-Lajoie, to be transmitted to his successor immediately after his appointment. It probably will be presented to the new Legislature as soon as it is constituted. At that time, it will become public. This document is to deal annually with the state and needs of education in the province of Quebec.

While this perhaps will show you some of the possibilities of the report in influencing government policy, it remains to be seen just exactly how the ideas contained in the report will be applied. I think it depends to some extent on the success of the Council in being sympathetic to, and realistic about, the needs of education at the time. It is also necessary to see the report as a document that can be used constructively by the Minister of Education and his staff. If the Council were to use it for political reasons or to sabotage the efforts of the Ministry, this would be regrettable. But there is certainly no indication that this is the intention of any of the groups. The general participation in planning, then, is the point that I would like to bring before you especially. It seems to us of fundamental importance to keep the public constantly informed and constantly involved in the educational dialogue. It seems to us that this policy should make for a very much stronger system on a decentralized basis (built at the level of the regional school commissions which have been recommended in the last volumes of the Parent Commission report), where power can actually be kept fairly close to the people, and the government can be looked upon as serving two roles: the role of providing educational services, and that of providing educational leadership.

I hope I have given you something of the spirit which stands behind the reforms which have been suggested. I would hesitate to speak about the course of events in Quebec in recent weeks, but, for myself, I certainly feel that the program that has been put in motion is one that can be applied by any party, at any time, provided the public is able and willing to participate in planning. That will determine the rate of progress.

Commentary

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I was very grateful for Dr. Munroe's exposition of the background for the age of planning. There are not many things to add to the exposition. I was happy that the main principles of social change, the causes behind the drive for planning, now have been laid down so clearly. Particularly, I point to what Dr. Munroe mentioned about the principles that have been established: that education must be for all; that we must now reconsider the whole question of human abilities; that learning should continue throughout life; and finally, that education has an economic value as well as a value for the individual.

What Dr. Munroe did this morning was to outline an organization that is designed to plan for the implementation of these principles, an organization which should make us able to build an educational system that considers human ability, and that serves society's economic needs. Now, I have one question about this planning organization as it has been built up in Quebec on the principle of decentralization: Does it work? I am going to be very controversial, because I have taken an exactly opposite view, that educational planning cannot be decentralized if it is going to work.

I completely agree that there must be educational planning on all levels of the educational system; I agree also that the public must participate in educational planning, but in perhaps only one phase of this planning, namely that of establishing objectives. The planning process in itself, which involves forecasting, setting up priorities, and coordination of many different ideas and plans, is hardly a matter for democratic participation of thousands of individuals. They must express their opinions, but I am not sure that they would be able to share the decision-making power. That is why we elect democratic representatives to parliament, because we don't believe we are living in old Athens anymore, where we can stand down there roaring and discussing, all of us together, what is going to happen. We elect democratic representatives, and they make the decisions. If we are not satisfied with their decisions, we throw them out at the next election.

Now, let me make myself clear. In Denmark, for instance, a couple of years ago, we decided to build a new technical high school comprising many buildings. This is a very expensive project in a small country like Denmark. We had been two years planning this. We had started building, when suddenly the professors in the chemistry department told us that they had decided to extend the chemistry course for an additional year. We were pretty shocked because this meant we were going to spend 100 million Danish Kroner (about $15.5 million) more on this project than we actually had planned. This is one of the results of decentralized planning, or decentralized decision-making.

In Canada a few months ago, a couple of universities decided suddenly to change their admissions policies. They may have done this with a view to what is going on everywhere else in their system. What may happen, however, as a result of this sort of action, is illustrated in the following example: Another university in the same country may have been examining the expected admissions numbers over the next several years. It may build a huge laboratory for chemistry and for experimental physics because it expects these students to come in. Now what happens? A second university sets a cheap admissions policy and takes all the students, and the first university has an empty building for experimental physics. This is hardly good planning. It is not planning at all. That is why I really question whether decentralized decision-making can truly be consistent with planning.

As another example, suppose we decide in one sector of the educational system to increase the number of secondary students by 50 per cent, as was done in Sweden. We make this as a separate decision. Nothing is happening in the teacher training colleges because this is another field. What happens? Well, just what we are all experiencing today. We have a teacher shortage, a shortage that might have been foreseen in 1945, if we had just taken the trouble to look up the statistics and see how many children were born in 1944 and 1945. We would not have had any trouble in the 1950's if we had planned carefully and if we had coordinated planning between teacher training colleges and the secondary schools. But this calls for some central body to perform the coordinating function. We are all building up our systems of higher education in both the technical and academic areas, but often blindly. In my department, for instance, we were planning for university education, but we did not see that the technical department was expanding immensely to include more practical engineers and middle technicians. Suddenly we saw that perhaps the numbers of secondary school students seeking admission to university would be lower than we would expect, since attractive alternatives to the Gymnasium had now been established. Oversights like this ought not to occur.

This is why I want to establish as one of the first principles that must govern educational planning, that planning must be *comprehensive*. By comprehensive I mean that every time you foresee a change anywhere in the educational system, you "stick to its tail," trace it all the way along the educational system, see what happens in the universities, what happens in teacher training colleges, what happens at the secondary schools level, trace it all the way along until the whole system has restored its balance. Now this process requires competent organization. An organization built on the principle of decentralized planning will hardly fulfil the requirements.

But we need something more. What happens if the Department of Health in Denmark decides that it is going to really do something for mental health—establish two new hospitals, for instance? A committee may realize that the new hospitals demand 200 more doctors. Ordinarily, departments of education know nothing about plans for new hospitals. So in fifteen years when the hospitals are built, there is a sudden outcry about a shortage of doctors. They cannot man these hospitals. This sort of thing happens everywhere—in education, in industry, in hospitals, everywhere. Somewhere in the Department of Education, though, you have to have people who study reports that come from the Ministry of Transport and the Ministry of Health, and so on, to see what is happening. Now, a plan may call for 500 new doctors. This means that you have to have 800 new students. According to our principle of comprehensive planning you must realize that having 800 new students means that you have taken these 800 students from another course. This means that you have to revise your plans. These students might, for instance, have gone into an ordinary science faculty; they might have gone to an engineering faculty; now, because the medical students have to come from somewhere, these other faculties will have fewer students. But you have to trace this change farther. Where do you get the teachers for the new medical students; where do you find facilities; and what institutes are *not* going to be built as a result of this change? It is all a matter of priorities and coordination, which in my opinion requires a central planning agency. No one in the world likes being planned for because it means that you have to be coordinated. Teachers and professors hate being coordinated because this means they have to submit their will to someone else's. That is why central planning is not very popular.

In this I have already touched on a second guiding principle for educational planning; educational planning must be *integral*. By integral I mean it must be coordinated with national plans in such fields as economics, labour market policy, and national service centres for education. In Denmark, we drew eight circles on a map. Then we said that here we had eight public service centres including every type of school and the most highly developed cultural, traffic, and health facilities. Each of them would constitute a power centre for future population development. This implies that we are not going to build more schools, for instance, in an area where our projections show there will be no demand for them. We are concentrating on the service centres, and feel they really call for a new administrative organization. At this point I begin to have doubts. Is a decentralized planning organization really suitable for carrying out such planning effectively? Or do we want such planning at all?

Finally, we should be aware that some countries, like Sweden and France, have reached advanced stages in educational planning. They have experienced the birth pangs. They have made the initial studies of the methodology of forecasting; they have set up the organization to cope with new situations; they have made a plan for total development of their educational systems until 1980. And in Denmark we are developing a plan for universities that extends to the year 2000. Canada, which is now held in good repute for its educational system, may find itself lagging behind other countries within one decade if it does not realize that, in planning, decisions have to be made on a centralized level; and this is whether you sympathize with this idea or not. You cannot just keep talking and having conferences on educational change. You need the type of organization that can make positive decisions about it.

Commentary

C. E. DICKSON
Superintendent of Schools, Lakeshore Regional School Board, Montreal

I think, as a general practitioner in the group here, I probably look at some of these things from the receiving end, and I would just like to stress that the ideal put forward by the Royal Commission in Quebec, and now being put into practice in the province, certainly has a strong appeal to people who are working in the field. It also has, on the basis of our experience to date, a strong appeal to the public.

I would like to tell you of some of the experiences that I have had in my work with planning committees at the local level, and perhaps mention some of the worries they present to me as a practitioner. I am involved as Director and General Superintendent of a regional school board, which is not a board of a type that Dr. Munroe spoke about this morning. The latter type has been proposed by the

Parent Commission, but has not become a reality. The regional school board with which I work is one which antedates the Great Charter of Education in Quebec, and is a grouping of school boards or school commissions for the purpose of providing secondary education only. I say "only" with some reservation, because we are expected to take responsibility for all types of special education and continuing adult education.

The movement for regional boards really got off the ground with Operation 55. This title has significance only as a catch phrase because there are actually sixty-four of these regional school boards in Quebec. The boards consist of anywhere from four former school commissions to something like seventy-two, grouped together. Our board consists of four school commissions which are all suburban or semi-rural in type, a relatively homogeneous group. When these regional school boards were organized, one requirement was that each board create an organism known as a regional planning committee. After our board was formed, it established a steering committee with a responsibility of selecting a cross-section of people to be the members of this planning committee. The steering committee members found out very quickly, however, that they had little knowledge of the human resources of their community. This was a relatively highly developed community, but artificial in the sense that it had not functioned previously as a community.

The planning committee was finally formed, and it consisted of twenty-one people who represented Home and School Associations, Boards of Trade, the Y.M.C.A., and the Canadian National Trades Union (CNTU); there were also a certain number selected simply because they were parents. Teachers and school administrators were also represented on this committee. We also made sure we had some competent women who were there as mothers and teachers. This group of twenty-one people was given a free mandate to come up with what it thought should be the educational program for the people living in their community. They were also entrusted with the responsibility of finding out how many pupils would have to be educated in the community from 1965 to 1971.

There is no doubt that this planning committee learned a great deal. When we look back at the report they made after a year's study, the report appears amateurish, but it was a sincere effort to meet a problem. This report was forwarded, as required, to the regional school board, which in turn had to accept it, modify it, or return it to the regional planning committee for further revision. Finally, after being approved by the regional school board as a master plan for our particular region, it was forwarded to the Ministry of Education and submitted as our suggested procedure for meeting the educational needs in our area through 1971.

Professor Thomsen's arguments are valid at this point. Here we need a central authority who will be able to look at this local contribution from a very broad point of view and come back, if necessary, to the original school board to say, "I think that you've overlooked some factors which are going to be very important." I would like the planning committee, on its part, to say to us, "Would you look at this particular aspect, and let us know whether we are right or not?" What I am saying is that once you set these democratic wheels in motion, you don't know exactly where they are going to take you. You create a necessity to keep involving people, and as you involve them, you develop a larger and larger clientele which wishes to be involved. This process becomes, to say the least, very disturbing to the traditionalist and to people who do not want to be involved in a democratic process. Our concern, in our own area, is whether we can continue to use advantageously all the talent that we have discovered and are continuing to discover as a result of this process. We have, however, found something vital to our community. Whether this system is going to be efficient, I don't know. However, to compensate for any lack of efficiency, I am looking for a very much keener community, one more deeply interested in what educators are going to be doing in the future. Such interest will not make our jobs easier, but it will certainly result in lots of plans and suggestions being more regularly available for community education.

Problems and Issues in Implementing Strategies in Educational Change

Topics for Discussion by Seminar Groups:

1. The role of various levels of government in facilitating educational change.
2. The role of teacher-training institutions and university faculties other than education in facilitating educational change.
3. The place of teachers and teachers' professional organizations in any emerging strategies and structures for educational change.
4. Financing educational change.
5. Models of change.
6. Regional organizations and their problems.

Group A:

Dean N. V. Scarfe, University of British Columbia, *Chairman*
Howard Russell, OISE, *Recorder*

Dean Scarfe opened our discussions by stating a few assumptions he thought we should focus on. One assumption he was willing to make, and no one challenged, was that there were changes needed that would not likely be made unless some action was taken by groups such as those represented here. These were not only changes in techniques, but possibly changes in our value system.

Dean Scarfe went on to pose one or two problems in addition to the six main problems that we were responsible for discussing. The first suggestion he made was that we consider the various types of inhibitors of change. He also charged us with the responsibility of considering who has the authority to initiate research, who has the authority to implement the results of research, and who has the authority to establish the priorities for deciding what research will be done and what parts of the research product will be implemented in the schools.

From there on the group took over, and in nearly all the considerations of what should be done to facilitate change there was a feeling that time, effort, and manpower were needed, and the assumption was that money must be had to provide these. I think that in cases where the money was not available, this lack was an inhibitor; and where money was available, sometimes in abundance, it facilitated change. The kinds of effort needed, I think we agreed, were communication (communication takes time and effort), liaison, co-operation, and the establishment of the right kind of climate within which change can take place. These things do not come about without time, effort, and money.

We discussed the first problem, that of establishing the responsibilities of the various levels of government. In spite of many limitations on the federal government's taking an active part in education, the group agreed the federal government had some responsibility to provide money; and there was some hope that it would be able to provide the kind of money needed in the various activities that change would require. I think that it is correct to say that we did not assign the federal government any responsibility for determining how the money should be spent, but obviously they would have some responsibility. In considering the provincial governments (perhaps it's my prejudice showing here), I think there was a general feeling that they should establish institutions similar to OISE, although not necessarily identical. It was thought that there was need of an agency with the express aim of establishing a research-development-change process within a province, independent of, but financed by, the government. Provincial governments are involved also on the municipal level, in that they have a responsibility to establish, or encourage the establishment of, research agencies there. I think the group felt that municipal research departments were an effective change agent where they were establishlished; that where municipal research departments were not established, there was some need for this type of research support, and that the provincial government should encourage the establishment of municipal or regional research departments. The idea of regional research departments came up in reference to municipalities not large enough to support research departments of their own.

An important point that arose several times during the discussion was the need for increased communication between teachers and the research agency. We have discussed this a number of times in the conference, but this came up as perhaps the key communication link required to establish the change mechanism for provinces, and for the country as a whole. I was especially pleased with an exchange during the morning between Dr. Prueter of the Ontario Curriculum Institute and Mr. Johnson of the Ontario Department of Education. Dr. Prueter was explaining the change model which he had described earlier, and the clarity of his explanation impressed our group. But I think we were even more impressed when Mr. Johnson spoke after Dr. Prueter and explained the role here of the Ontario Department of Education. I think it was quite evident to the group that with these two men there were the climate and attitude of trust and respect required for cooperation and communication, and for the various phases of change to be accomplished effectively.

I think that the final and perhaps the main point that the group wanted to make was that the climate for change (a climate that can be established by using the right words at the right times) that we saw in these two men needed to be extended to researcher-teacher communication. It needed to be extended to all other varieties of communication. Politicians need this kind of communication with the public, so that the atmosphere is right for getting the money needed to make an effective change model work. The main point is, then, to establish this climate for change and extend it to all those agencies that are involved in the change.

Group B:

P. F. Bargen, Edmonton Public School Board, *Chairman*
Shirley K. Wigmore, OISE, *Recorder*

Our group was instructed to consider teacher training institutions and university faculties other than those of education, but we discussed all kinds of institutions that might promote change. It was considered that whatever the institution, it must conduct research on the programs of the educational system and on the methodology by which programs are carried out. It must study the problems which the educational system encounters, and inculcate attitudes in the practitioners, the classroom teachers, to make sure they are receptive to change and are able to change the concepts of the program and its methodologies. A good deal of attention was given to the problems of creating an atmosphere of communication. I think perhaps there was also an implicit awareness of the need for implementation, but "communication" seemed to be the word that was constantly used. Then we went on to consider whether we could talk about institutions and their efforts to meet their goals without defining the goals or without considering who is to define them.

It was generally agreed that our goal is not the extensive kind of economic planning which was described by Professor Thomsen yesterday. But, if we speak of the aims of education, are these educating to meet the ethical and moral issues; educating to better prepare the individual to meet technological change; or educating to prepare the individual to meet a life of work or of pleasure? Is it commendable in our educational system that so many do adapt to change? Or is it regrettable that many fail to adapt. The group considered this and arrived at the conclusion that, on the community level perhaps, the teachers themselves can best define our educational needs; but that, on the regional or national level, researchers can quote experts with their greater access to information and to contacts across the country, and so they are able perhaps to pool their insights for greater direction.

In any case, the institutions which assist in effecting change must have some direction in purposes and goals in order to function efficiently. Otherwise they will attempt too diverse a program and not succeed in any part of it. They can receive some definitions of aims and goals from the society-at-large, and perhaps more especially from those charged with defining society's aims and goals, for example the economists and philosophers. Our group agreed that it appears that future institutions in Canada will develop out of those presently existing, and that distinct institutes will not develop patterns of subject specialization such as are being created in several American research and development centres. It is agreed that the purposes and resources of teacher training institutions are at present directed primarily toward finding enough competent teachers. In such a situation the research and development function, where it exists, inevitably plays a secondary role. Our group felt that within the university community there remains, perhaps, some lack of appreciation of education as a scholarly discipline; only the products of rigorous research can dispel this attitude.

We concluded that the implementation of change depends on careful selection of the appropriate model for these institutions—whether they be primarily teacher training institutions or other types of academic communities—in reference to their service to a region. Implementation of change depends upon the point in historical development in which the institution emerges and upon proper selection of its staff or faculty. The latter is particularly important. These must be individuals who are creative thinkers and who are also able to promote in teachers an attitude of receptivity to change. The third and last aspect is the proper education and continuing education of teachers, who are the task force for bringing about change in the educational system.

Group C:

Dean Gabriel LaRocque, University of Montreal, *Chairman*

We were instructed to enter discussion on point three of the program. We entered as instructed, but we did not come out of this first topic: the place of teachers and teachers' professional organizations in any emerging strategies and structures for educational change. Discussion started with an effort to understand the basic assumption of this conference. Our understanding could be reported as follows:

First, since the war, many rapid changes have been occurring in our society, and every aspect of human life is being deeply affected by this evolution.

Second, the change process is a constant one and accelerates with the years.

Third, the changes already made, or in process of emerging, have a definite impact on the educational system, but our schools cannot keep pace with social developments. They are lagging behind more and more.

Fourth, we draw the conclusion that we must control the pacing of, and succeed in bridging the gap between, social evolution and educational development. Many participants question the centralization policy put forward by Dr. Thomsen. As a means toward more rapid change in education, we are not convinced that it could be used with success in our country. Canada is a large country, and the federal government has no authority in the field of education. Even within the boundaries of each province we must take account of two cultures and of the importance of leaving some autonomy to those who are responsible for education at the various levels. Through this discussion, we came to identify the various levels of responsibility for changing education. Among them were the government, regions, and school levels. At this point we were ready to discuss our specific topic.

Right at the beginning we took for granted that the teachers and their professional organizations must play a prominent role in facilitating educational change. It is not mainly a matter of rights: their participation should be considered an essential part of their function in society. At this point the group felt that sometimes we are inclined to put too much emphasis upon the reluctance of teachers when confronted with changes to be effected. This reaction has been exaggerated. Are there many other professional groups trying to up-date their knowledge and practice to the extent educators are? Every year, or every summer, a large number of teachers attend courses to improve their qualifications or extend them.

The lack of satisfaction among the teachers themselves and within their own organizations regarding methods and results of day-to-day education should be looked upon as a fundamental drive toward better education, or as a principle agent of real progress in education. More and more conscious of the constant need for changing education, the teachers should be present at the various levels of decision-making about the changes to be effected or implemented. The awareness and co-operation of the teacher would be better developed if, within the different organizations, persons, groups, or committees were specially appointed to take care of this new responsibility for looking ahead in education. Among their functions we have pointed out those of identifying and analyzing the social and educational needs of modern society and, correspondingly, of finding the best means of improving education at a faster tempo so as to keep up with social change.

In addition, these new education engineers should keep close contact with research and development centres. In the position of middlemen, between the researchers and practitioners, they would be able to contribute a lot to the identification of needs and the development of new methods and new curricula, but they would also be able to disseminate the results of their research and to coordinate the evaluation of the changes taking place in the schools. Without denying the need for more and more researchers, our discussion group repeatedly expressed the opinion that the main problem facing us is the problem of better two-way communication between teachers and the research and development centres. Such communication, improved rapidly, would be one of the best means of accelerating the development of education.

Group D:

K. E. Gilliss, New Brunswick Teachers' Association, *Chairman* and *Recorder*

Group D concentrated particularly on the topic "financing educational change," although we did not hesitate to discuss other topics. There was general agreement that all levels of government, federal, provincial, and local, as well as private foundations and some voluntary organizations, have some responsibility or interest in financing educational change. Our group expressed the belief that federal funds should be made available to stimulate educational change and to provide a measure of equalization, so that poorer provinces could cope with change and benefit from it. This belief was predicated on the idea that the federal government has a legitimate interest and responsibility in three types of research: First, basic research into human behaviour and learning; second, manpower and related economic studies; and third, research into the process of change itself as it affects both individuals and groups in our society.

Unfortunately, we were not able to devise a satisfactory structure by which this financial support would be administered. However, we had to leave something for this conference to undertake as follow-up action! It was suggested that, if the need were firmly established, the vehicle could be devised, in much the same way as other plans have been, to circumvent the technical application of the B. N. A. Act to education. The second report of the Economic Council, for example, was cited as a strong support, and the growing awareness that many educational problems are becoming too big for provincial or local solution is creating a climate favourable to the institution of some type of federal bureau or office of education. National educational studies might also help clarify needs in the light of educational change. The local government has the responsibility of financing local educational change and of creating a climate and local resources favourable to innovation in the school system. Good salaries and working conditions should help, and awareness that change is with us and will always be present, is also necessary. Teachers, through their professional organizations, are already operating workshops and supporting action research, as well as co-operating with other agencies and organizations in up-dating teacher training. Specialist subject councils have been set up by most teachers' organizations, and these are concentrating on improvement within the specialty. Some teachers' organizations have set up in-service programs, and some of these operate in co-operation with the universities.

The group agreed that teachers must be involved in educational innovation and change, and that teacher education must prepare the teacher for new and changing functions. In general, it was felt that there should be better communication among groups involved in the educational process. There was discussion of what changes are taking place and how much preparation for change should be undertaken. It was agreed that basic research will have to provide much new knowledge, but that such research must be carried out concurrently with implementation of existing innovations. In other words, education cannot afford to wait until basic research provides all the answers. Teachers must be made aware of new programs, methods, and materials. Teachers' organizations, as well as local and provincial authorities, must co-operate in this undertaking.

Research must be close to government, since it should contribute to rational decision-making; it must be close to teachers who implement it in the school system; and it must be close to teacher training institutions, so that teachers-in-training will become acquainted with research findings and will adopt the research attitude. Research, innovation, and change must be considered as integral parts of the educational process at all levels. Although some concern was expressed that bodies such as OISE may lose their independence, or have it curtailed in one way or another, this did not appear to be a cause of great anxiety. Involvement of many people from many different organizations should safeguard the freedom of the

Institute and remove it from the dangers of political or special-group interference.

There was some difference of opinion on the role of teachers in formulating or developing curriculum. One point of view was that teachers are not competent to develop curriculum. The opposing view was that teachers *must* do most of the work of curriculum development. Nevertheless, the group seemed to agree that teachers cannot develop and implement innovations or new curriculum by themselves, nor can they be expected merely to accept and implement what someone tells them is desirable. They must have structures which permit them to keep up with new knowledge and to participate actively in educational change and decision-making.

Group E:

Marion Jenkinson, OISE, *Chairman* and *Recorder*

I have chosen to take three pivots around which our discussion appeared to turn. We were asked particularly to concentrate first on models of change, and this is the first pivot about which our discussion moved. We discussed this at some length, particularly in the light of the dangerous tendency some people felt was becoming apparent, namely that research and change were becoming ends in themselves rather than means to an end. Our group felt we have many illustrations of what might happen to us if this occurred, and that we seem to be thinking of change almost entirely in the abstract. Was this possible, many people asked, since many types of change will depend upon the species of change or the type of factor involved? Organizational change, for example, may demand very different tactics from curricular change. If we are concerned with accelerating change in terms of evolution, then perhaps there are different ways of accomplishing this acceleration, and the consensus of Group E was that we should focus attention on this type of diversification of change.

Now the second point, which was a real pivot in our discussion, was the problem of the human element in this change, because it is the human element which appears to pose many, many problems. One of the things that came up early in our discussion was that, although we talk so much of individual differences in psychology, we tend to forget the force and impact of individuals. There was considerable support for the evidence we have historically that a good deal of change has been brought about by aggressive, vociferous individuals who have ideas and put them forward forcibly. Now, while it was agreed that in education we have had many men-for-the-hour, and that ripeness is all, the problem in terms of our research here is that this charismatic type of leader is almost God-given and cannot be researched. However, there was a general feeling that we must use and recognize fully the talents of these people.

Now our discussion, too, ranged considerably over the problems of the nature and characteristics of the innovators in education (whether they be at the top level, the high administrative level, or in the classroom) as compared to what someone termed the "resistors" in education. We discussed whether this was a question of temperament, environment, opportunity, or whatever. In fact, at one stage I think we almost got into the problem of the nature-nurture controversy in producing this type of personnel. But we had some interesting suggestions about identification of innovators. Professor Philip Taylor had, I thought, a very original idea. He suggested that what we have to look for are what he termed "the front runners in the race." Look for these front runners and train them, give them opportunity, give them facilities, and then let them go back and disseminate their ideas as though through osmosis. This is a very effective way of promoting teacher-change. And perhaps we should not attempt to make all our changes *en masse*, or convert everyone immediately to this.

The third element was the locus of change initiation. Where does change start? We discussed various external elements to this. First of all, the civil servant, the economist, the sociologist, and so on, can very often make decisions which will enable us to have the money and opportunity to effect a change which we would not have otherwise. It seemed that our function should be to provide these people with sufficient information and to get them to make some decisions. But there are other things in the atmosphere, if you like, which we have to take account of, and one of these is the knowledge explosion. Whether we like it or not in schools, we can't escape this intellectual explosion from outside, and so teachers inevitably have had to keep up to date. A third element, and one we cannot ignore, is the impact of commerce. Education is big business; and commerce may have a big part to play in many of the changes that will occur in our school systems. I suspect that in the next few years some of our major changes in techniques are going to arise because of the development of what I call educational hardware. The combination of IBM and Science Research Associates is going to have a tremendous impact in terms of the types of things they can produce. Fourthly, there are the silent forces, the ethos of society, those sociological things which are present but not often brought to the surface. There is the fact, for example, that in a modern industrial, technological society, more formal schooling appears to be necessary to bring the population to the point of technological educational self-sufficiency.

In addition to my three main points, I would just mention those things which we discussed which perhaps had not been brought out elsewhere. Most discussants felt that the government should take responsibility, not only for initial training of teachers, but for their continuing education. This should be in part initiated by the teacher but should be also a part of the total service that we expect to be given by society, so that we can ensure that our teachers are kept up to date. We considered teacher training institutions, and while we felt that they had to be abreast of the times, we felt it would be a little unrealistic to expect them to be almost exclusively the innovators. Their specific responsibility is to train people to meet day-to-day situations. Once teachers have found their feet in the classroom, then they have the security to innovate. Finally, we discussed teachers' organizations and recognized fully that they can be a most potent force in ensuring that the system, and teachers particularly, remain viable in this changing environment.

My remaining comments arise from our discussion of models. We had in this conference been using "model" in two ways. The first was as the object of imitation. We have had much discussion in this conference of the analogy between change in agriculture, change in engineering, research and development in engineering, and medical research and medical development. One of the things I think basic psychology has taught us is that we learn more through discriminating differences than through discriminating similarities. Perhaps in education we have to look for the very dissimilar things in change. The second type of "model" discussed was the type of fascinating intellectual game that the pure scientists play when they construct a theoretical framework and then, on the basis of the theories, construct hypotheses and test them. This is another perfectly acceptable type of model, but I would leave you with this suggestion: that if we are going forward with strategies for change, these should not be just stratagems; we should be as productive in our gamesmanship of this type as Norbert Weiner was with cybernetics and his impact on automation.

Group F:

R. F. E. Harvey, University of Saskatchewan, *Chairman*
W. J. Gushue, Memorial University, Nfld., *Recorder*

We had difficulty with the word "regional," but to make our discussion manageable, we restricted it to two levels or types of structures. Our group felt that in addition to OISE and the Bureau of Planning in Quebec, a need existed for several other such large research and development centres in the country, in different geographical areas. The first one that comes to mind is the Maritimes. The Fletcher Report, recently released, recommended that an institute of education be established in Nova Scotia for the Atlantic Provinces. Another R & D centre could be situated on the prairies, and possibly a third in British Columbia. Our committee was aware that setting up these centres involved such problems as the lack of trained and competent personnel, local jealousies, lack of financial support, and provincial autonomy. But we felt the time has come in Canada when people in research and education should think along regional lines. It does not mean that other institutes will start to appear on the horizon tomorrow.

Now, in addition to this type of structure, our committee thought more attention should be given to a development type of unit at the local level; that is, with the provincial department of education and perhaps some of the school boards, certainly the larger ones. While some research departments do exist at present, these departments are not concerned with bringing significant innovations into classrooms. For example, although much is known already of the efficacy of team-teaching, the ungraded school, programmed learning, and so on, these practices are not in the classroom yet on a very large scale, and one of the reasons why they are not is that it is incredibly difficult to bring them into a classroom. A great amount of work has to be done about physical facilities, administration and organization, and even reviewing the literature; teachers cannot do all this work on their own. Contrary to what many people believe, the teachers want change; but bringing an innovation to their classrooms involves much more work than is recognized. The point is teachers need help from outside; they need middlemen.

Our report, then, has two recommendations: one is for more R & D centres such as OISE; the second, for more attention to be given to local development units by everybody concerned with research in education.

DANIEL E. BERYLYNE
Department of Psychology, University of Toronto

The Relationship of the Social Sciences to Educational Planning, Research, and Development

I find myself faced with an interesting examination question—"Describe and discuss the role of the social sciences in education." Like most wary examination candidates, I recognize that the question can be attacked in many different ways, and I must make clear from the outset within what limitations I shall proceed. For one thing, I am unable to speak for all the social sciences or, to use a term that might offend some linguistic purists but is in many ways preferable, behavioural sciences. I can speak only for psychology and for experimental psychology in particular. I think, however, that much of what I say would be acceptable to representatives of other behavioural sciences, like anthropology, sociology, and linguistics, and that they would endorse much of what I shall have to suggest.

According to one possible interpretation, this examination question requires me to state what function the behavioural sciences, and psychology in particular, *ought to have* in education. That is an easy question to answer. I feel like handing in my paper and going out immediately, because the answer is a very brief one. The appropriate function is simply the one that basic research ought to have in any field of application. The role of psychology in education should be exactly that of, say, physics and chemistry in engineering, or physiology in medicine, or, I suppose, zoology in veterinary practice. But when I examine the question further, I can see lurking behind it another possible question, namely, "Compare and contrast the role that the behavioural sciences *have had* in educational practice with the role of the appropriate basic sciences in other fields of application." And that is a question that cannot be dismissed so lightly.

It is, in fact, a somewhat painful question to answer. There is a great and regrettable contrast between the relations that education has had with what should be its basic, underpinning sciences and the situation in other fields of activity that require rational planning. There is a contrast in the degree to which the role of basic research has been understood not only by the general public but even by specialists in educational practice.

The general public is well aware that it is surrounded by objects that are undergoing continual change. When we look at a television set, we realize that such sets did not exist more than twenty or thirty years ago. We know that the television sets of today are very different from those that existed a few years ago, and we do not doubt that more changes will be found in next year's models and the models of the year after that. We know, when we take a jet flight, that jet aircraft were not a normal means of travel over ten years ago and that today's jet planes are due to be replaced before long by supersonic planes, rocket craft, and there is no knowing what after that. We all know that many of the remedies now used by medical men have not been available for long, and we confidently expect that remedies will in time be found for diseases that cannot yet be cured. And although members of the general public are not so well informed as we sometimes wish about what research actually is and how it proceeds, they realize nevertheless that these technological changes are products of research that has been going on for a long time and will continue to generate further progress. But for various reasons, the public is not accustomed to thinking of education in these terms.

Let us consider two other fields of activity as examples. Let us have a look at transportation and medicine. It is widely understood that the research from which the modern jet airplane emerged has gone through a number of stages. Anybody who has a sufficient scientific background knows how much is owed to those who established thermo-dynamics in the early 19th century, to men like Boyle and Charles and Gay-Lussac who discovered the gas laws before that, and to men like Galileo and Newton who, earlier still, worked out the laws of motion. The wider public may not know all these details, but science-fiction and science-nonfiction films have disseminated dim images of scientists in laboratories engaged in experiments whose implications may not be immediately apparent but which eventually make possible miracles of technology like flight. Then, it is understood that, after basic research has gone on for centuries, the next stage is possible. Aircraft designers are able to sit down at a drawing board and construct specifications for a machine that will fulfill the requirements of commercial flight. But this does not mean that this aircraft is manufactured and put into service immediately. Before that happens, many other things must be done. A model of the aircraft has to be built and then tested in a wind tunnel. Later, test pilots are sent up in the plane under conditions which simulate, as far as possible, the conditions, including the most extreme emergencies, that will be met in the course of everyday flying. Only then is the aircraft put into use for the general public. It is very difficult indeed to know when the moment for that has come. As a matter of fact, the accident rate is commonly higher for new aircraft models than for older models, showing that, as they say in the computer business, things have not been as thoroughly "debugged" as was thought.

The same stages are generally understood to be necessary for medical progress. Medical researchers draw on knowledge accumulated by centuries of work in physics and chemistry and the various branches of biology. From this knowledge, they derive hypotheses that point to possible therapeutic advances, often trying them out on animals in the first instance. Through their work, a compound may be discovered that seems to cure, say, malignant tumors in rats. But it is not made available for general prescription immediately. There are many steps to be taken before that. There must be clinical tests in which the drug is tried out with experimental and control groups of patients, representative of those whom the drug might benefit. Only after these have been completed is the drug made part of the normal armoury of the doctor, and, as we know from the thalidomide catastrophe, even then misjudgments can be made. Sooner or later, of course, promising discoveries have to be implemented, even though absolute certainty can never be achieved.

Plenty of other examples could be given, all of them showing the indispensability and close interdependence of research carried on at various levels. First, there must be fundamental research aimed at elucidating the nature of the phenomena in question and identifying the factors that determine them. Then, there has to be the search for new techniques, suggested by these advances in basic knowledge, that might contribute to the solution of specific practical problems. These must next be subjected to preliminary tests in an artificial situation that forms some kind of controllable model of the real-life situation in which they would be applied if successful. Finally, when the preliminary tests have confirmed the value of the new techniques and led to their refinement, their potentialities must be rigorously examined in conditions that come as close as possible to those in which they are to be used. Only after all these steps have been completed is the technique ready for general adoption.

This process, with all its component stages, is exactly what should go on in education. We can hardly feel perfectly satisfied with the way in which our present pedagogical procedures are fulfilling their aims. It is evident that in education, as in other human activities, improvement can only come from progress in understanding the processes that are at work. Research must be vigorously pursued at all levels from the most academic laboratory experiment to the evaluation study in the classroom, and close interaction between researchers working at different levels is needed. In this way, continuous betterment can be ensured, with the ground laid for the dimly conceived wonders of the remote future, while the latest tried and tested advances are put into effect year by year. This is what should happen, but it is not what happens.

For one thing, educational techniques have not changed very much over the last few thousand years. The classroom that we know does not look strikingly different from the classroom of the ancient Greeks or the ancient Romans or the ancient Orientals. There have been slight variations from time to time. In some societies, pupils have sat on the floor and, in others, they have sat at desks. They have sometimes been arranged around the teacher in an arc, and, at other times, they have sat in rows facing the teacher. But neither the appearance of the classroom nor what the teacher actually does to impart knowledge has changed very radically through the ages.

This is not to deny that education has undergone important changes. For example, its content has changed as knowledge has advanced and as ideas of what is worth teaching have changed. There have been revolutionary developments resulting from the establishment of universal education through wider and wider strata of the population, and this has produced transformations not only in education but in society in general. We know that school is not, on the whole, such a grim and formidable place for the modern child as it was for his great-grandparents, although the change in that respect is by no means as ubiquitous and complete as one would like to think.

But such changes as have taken place in education, even major changes, have not taken place primarily through research. They have been produced mainly by changes in social philosophy and in political ideology. It is true that, in this century, education has been touched by the thought of men like Dewey, and in a much more diluted form, men like Freud, giving rise to a concern for social adjustment and healthy personality development. These men arrived at the conclusions that they put forward by trying out new practices and apparently finding that they worked. But with all due respect to these contributions, this is not what we understand by research. There are all too many examples in history of innovations that, in the light of experience, especially the experience of those who devised them, seemed convincingly to work and yet were shown by subsequent tests not to work at all. I can think myself of only a few scattered examples of genuine research having a more than superficial impact on educational practice. I suppose the experiments of Woodworth and Thorndike, showing the limitations of transfer of training, had something to do with the abandonment of formal discipline (as it used to be called by those with the great faith in rote learning that characterized Victorian education), and probably, in a very indirect manner, the work of the Gestalt psychologists on perception encouraged the adoption of the whole-word method of teaching reading.

Not only has there been little change in the techniques of instruction over the years. The general public, which is endlessly informed by mass media of improvements, real or imaginary, in industrial products and in medical resources, has not learned to demand comparable advances in the education of its children. There is the expectation that the content of what is taught will keep up with the times. But there is little awareness that the methods by which it is taught should be constantly updated. Whereas the television commercial frequently credits "research" with the merits of the products that it announces, the comparable role that research has to play in educational progress does not enjoy nearly so much public recognition. Above all, there is little sense, either among the general public or among specialists in education, of how the basic behavioural sciences, such as psychology, should properly fit into the scheme.

There are, in particular, two attitudes that psychologists like ourselves encounter distressingly often. First, there is the view that contemporary psychology, such as we represent, is irrelevant to education. The psychologist is known to have some extremely eccentric tastes. For one thing, he spends much of his time working, not with human beings, but with rats and pigeons and other lower animals. Not only that, but he forces these poor rats and pigeons into activities that no self-respecting animal would waste much time on if left to its own judgment. He trains human beings to repeat nonsense syllables and disconnected words and to draw pictures seen in a mirror, which do not seem to form an essential preparation for the problems of life and certainly do not recommend themselves as major elements of the school curriculum. And, of course, this view has a measure of truth in it. Much of psychology is irrelevant to education, in the same way that the work of Galileo was irrelevant to space travel. You have all heard the story, probably apocryphal, of how Galileo went to the top of the Leaning Tower of Pisa, dropped two stones of different weights and found that they reached the earth at the same time. What could be less relevant to the task of going to the moon? For one thing, if we go to the moon we have to go straight up in the air and Galileo's stones went in the opposite direction! Besides, stones are no good as space ships: they are not hollow, and they are too small! These objections are typical of the kind that we find directed at our own work every day. Nevertheless, if Galileo and people like him had not studied the principles governing gravitation, the calculation of the escape velocity that enables a rocket to leave the earth's gravitational field and the discovery of ways of attaining that velocity would certainly have been impossible.

At other times, we find an opposite but equally regrettable attitude. Instead of being told that what we are doing is irrelevant, we are called upon to supply lists of principles that should and could be put into practice in the classroom immediately or to give immediate confident predictions of how this or that practice would work. This is not even the worst that happens. All too often, people have been impatient with our tardiness in supplying principles and predictions and have therefore derived them from our own work for us, blaming us when the consequences are not as they intended. This again is a misunderstanding. Every time we go up in an airplane, we owe a great deal to the work of pioneers like Newton and Galileo, but we can also be thankful that Newton and Galileo did not design or pilot the plane!

The behavioural scientist is neither an ivory-tower investigator whose work has nothing to do with the real world nor a man who can tell you immediately exactly how your problems can be solved and whether anything you propose to do will have good or bad results. The behavioural scientist's proper role is, I suggest, essentially twofold.

First, he has to provide answers to the questions that must be attacked before we can even ask how children can be educated effectively. Basic research in psychology has to remove our basic ignorance, and our basic ignorance is considerable. We are quite often asked by various people, including educators, how to do this, that, or the other. Apparently because of the omniscience assumed by certain early schools of psychology, the psychologist is expected to know all the answers. He is, however, likely to offer one answer to 99 per cent of the questions put to him, namely: "We don't know. More research should be done." This is as true of the processes that underlie education as of anything else. We know very little indeed about the kinds of learning that can go on and should go on in the classroom. After about sixty or seventy years, we have built up a considerable stock of knowledge about simpler forms of learning, like classical conditioned responses, instrumental conditioned responses, verbal learning of disconnected words and nonsense syllables, and learning of motor skills. All these forms of learning occur in schools. But most school learning is of more complex varieties, requiring skill at manipulating systems of symbols.

As far as intellectual learning is concerned, work on simpler kinds of learning is a necessary preliminary, but there is still much that we have to study. We need to know more about the motivational conditions that govern receptivity to knowledge. We need to know more about the perceptual and attentive processes that direct a child to the stimulus elements by which his behaviour should be guided. We need to know more about the development of intellectual processes in the child and about the differences in ability, involving far more than the familiar I.Q., and the personality differences that determine how an individual child should be treated in order to get the best from him.

The patient, single-minded search for scientific laws has to be the basic behavioural scientist's main contribution to the furtherance of progress in education, and it is one that he has to make on his own, undisturbed by the practical exigencies that dog those involved in the everyday running of the educational system. He may, however, be able to help also in other ways touching more immediately on the process of teaching and administering schools. These other contributions require interaction between the behavioural scientist and specialists in education. The psychologist can, for example, help applied research by raising problems, and many writers have pointed out that knowledge is often advanced more by people who find questions than by people who find answers. Once the right problems have been located, it is often only a matter of time before the solutions are found. The psychologist can point to variables and factors that need to be studied. He can suggest hypotheses regarding what may work in the classroom. He can supply techniques for testing the hypotheses. He can tell the educator what research findings are already available in relevant fields of basic psychology. Although the research that will clear up most questions has yet to be done, there is already a mass of pertinent literature that is largely unfamiliar to people working in education. We might not be able to supply information out of our own heads immediately, but we might be able to direct those who inquire to the right sources. And perhaps not the least important thing that we can offer is our training in critical evaluation. If there is one thing that basic behavioural scientists have learned, it is to scrutinize other people's claims and the evidence adduced to support them. At a time of readiness for change, like the present, those who administer education find themselves bombarded with exhortations to do this or do that, or even to leave things as they are. There are various obvious reasons why many of the advocates of new curricula or new textbooks or new teaching methods are far from disinterested, so that the virtues of their contentions are hard to sort out. The behavioural scientist can certainly not be trusted to do this by himself. But his professional scepticism and detachment might have a useful part to play.

This means that the behavioural scientist's voice might with advantage be listened to among others before decisions are made by those who administer education. It is a remarkable fact, however, that the non-applied psychologist, for one, is rarely invited to take part in the decision-making process. The people who are responsible for planning in education, whether in government departments, in boards of education, or other agencies, rarely think of people like us as ones whose views may be worth soliciting. It is noteworthy that, when advisory boards are set up that purport to represent all conceivable interests that might have a bearing on education, the basic behavioural scientist is customarily left out. This is probably not deliberate. It may never have occurred to anybody that he should be brought in. It may even be that when he has been brought in in the past, attempts have been made to use him in the wrong way, and this has had a discouraging effect.

The fact remains, however, that the most important way that the behavioural scientists can help education is ultimately by getting on with his own research work in his accustomed manner. And of all the levels of research that the advancement of education must depend on, the fundamental level is where the most leeway must be given. So we must return to some of the questions that concern it.

The first is: Where should basic research of interest to education be conducted? In Eastern Europe, the main bodies responsible for basic research are the scientific academies, which maintain large institutes, each consisting of several laboratories. In Western Europe and in North America, this has not been a traditional function of academies. In these parts of the world the main location for basic research has been, for at least a century, and is likely to remain for some time, the university department. It is true that research institutes not affiliated with universities are becoming more numerous. Some of them are set up by governments, some by industrial firms, and some just set themselves up as private endeavours. Although they often produce research of high value, it is significant that successful non-academic research institutes invariably make their working conditions as similar as possible to those of the academic researcher in the university. Really fruitful basic research can come about in one way and one way only, and that is by a relatively uncommon coincidence. Somebody must have a bright idea, the motivation to carry it through (with all the frustration and exhaustion that this implies), and the training to direct it appropriately. There is no way of forcing anybody to do basic research creatively. This does not mean that there is no way of encouraging people to do it or of making it more likely that they will. This can be done by providing them with adequate facilities, by showing some appreciation for their efforts, by supplying them with the financial support they need to get their research done. But after that, the researchers must be left to themselves. Things have to be left to brew. There is no way of speeding things up beyond a certain limit.

The basic researcher needs independence. When we talk about academic freedom or academic independence, we often think of freedom from political interference. This kind of interference is, of course, a danger but not so serious as it is sometimes made out to be, perhaps because we are so keenly aware of it. More important is independence from close relations with people who are responsible for keeping the *status quo* going. It is important, because pressure to conduct research in directions that will maintain the *status quo* can be restrictive. Above all, there has to be independence from pressure to provide something of practical value quickly. Good basic research, like other human activities, can have many different sources of motivation. It is sometimes aimed simply and solely at the solution of an interesting problem. There is often an explicit hope that some day it will contribute to human welfare, but how will rarely be clear for some time. Research of practical value sometimes comes out of a completely different applied problem from the one for which it is eventually found useful. But whatever the ultimate expectations are, the basic researcher has to be left to follow his own interests and ideas where they lead him.

This is going to be particularly true during the next few years because of some mundane economic problems. In most of the world, but especially in North America, there is at present a rapid demand for expansion of university education, coming together with the results of a steep rise in the birth rate. There is fierce and savage competition for academic personnel, especially able personnel with some aptitude for research. This competition is probably going to be and perhaps has already become, worse in Canada than anywhere else in the world, simply because the overdue expansion in the Canadian university system happens to be coming just now, and because we have to the south of us a neighbour who is sensitive to the need for the kind of personnel I am talking about and is not reluctant to offer inducements to them. Canada has not in the past been noted for over-generous support of research of any kind. In Canada, we do not have the large foundations that exist in the United States and in some Western European countries. We do not have business corporations that are willing to pour vast sums into basic research; government bodies, particularly those of the federal government, have certainly not attempted to emulate the United States Government or even the governments of some Western European countries in this regard. Now things are fortunately beginning to change. The amount of money available for basic psychological research in Canada has increased sharply in the last few years, but whether it is increasing fast enough to avoid disaster is still a moot question. It is important to recruit able researchers from Canada and from other countries, the United States particularly. OISE has had very encouraging success in attracting capable people, some of them from outside Canada. Other similar organizations will no doubt do the same. But we shall have to give the highest priority to retaining the qualified personnel we are fortunate to have and using their abilities to the best advantage. This means that bodies concerned with the administration, encouragement, and financial support of research must place a great weight on what have come to be called "extra-mural" research programs; this means programs in which applications for research grants or contracts are invited from investigators, belonging to university departments and comparable organizations, for the support of projects conceived and initiated by them. The limits within which projects will be considered relevant must be defined. In this way, people who have been active in neighbouring areas may be induced to move a little in the desired direction. But the limits must be made as broad as they reasonably can be. Apart from that, one can only wait for those with good ideas to put them forward and rely on them to use their judgment effectively, once their qualifications and aims have sustained scrutiny.

In case this may sound like the special pleading of an experimental psychologist, who is concerned to feather the nest of his ilk with callous indifference to the pressing needs of society, I might point out that these considerations are far from new and have been found inescapable in other parts of the world also. The USSR is often thought of as a country that is not particularly squeamish about government interference, and there is some truth in this; in fact, the Marxist ideology is felt to be incompatible with encouraging people to follow scholarly interest for their own edification. Such pursuit used to be called "bourgeois objectivism" and was considered undesirable. But even in Russia, no better way of getting basic research done has been found than to pick out capable researchers and give them their freedom to proceed. I was looking this morning at a series of reports from the Laboratory of Thought and Speech of the Academy of Pedagogical Sciences in Moscow. These are some of the topics that I found: "Color names in the Chukot language," "The vocal communicative system of monkeys," "The perception of the inclination of a line from the vertical." Now we know very well that no official responsible for education in any regime would pick out those three as topics of the greatest urgency when he is dispensing money for research for education. But research was done on these topics because it so happened that staff members of the Laboratory in Moscow had become interested in them, had found what seemed to be fruitful leads, and were willing to persist in following them up. I should mention that the Academy of Pedagogical Sciences has been an undeniable success since it was set up. Both basic and applied research goes on there and has resulted in far-reaching changes in the Russian educational system, changes which the interested officials must surely feel are enough to justify its existence.

The point we have to recognize is that education is still in a pre-scientific era. Education is essentially where medicine was about 150 years ago, and, in those days, medical techniques formed a remarkable mixture. On the one hand, there had been shrewd insights which have proved their value to this day. Hippocrates suggested that patients suffering from tuberculosis should be sent off to the mountains to rest, and this is of course still widely prescribed. From ancient times, medical men have used extracts of plants like the deadly nightshade and the purple foxglove; these extracts are now known to contain drugs like atropine and digitalis, whose worth has been amply demonstrated, so that they are still commonly used by the medical profession. But side by side with effective measures like these, centuries of practical experience had produced others like blood-letting. Many a medical man must have been willing to give you some convincing case histories of patients who had benefited from having their veins opened or having leeches applied to their skin. Many a medical man would support his belief in the value of these remedies not only with his own years of intensive clinical experience but with those of generations of his predecessors. But when rigorous statistical methods were introduced into medicine in the early nineteenth century by men like Louis, Magendie, and Dietl, phlebotomy and leech-craft were found to be quite effective at reducing the patient's chances of survival and prolonging the average duration of the illness.

Education must, without any doubt, be in exactly the same state today. What is done in the schools must consist in part of practices that have grown up throughout the centuries and been retained because they work. But there must be at least as many practices that do harm rather than good and have simply persisted through inertia and through becoming vested interests, so that those who are committed to them are loth to give them up. And until rigorous research is done, there is no way whatever of telling which is which. The analogy between the medicine of the year 1800, say, and modern education is quite good, but by no means perfect. Voltaire once said that the art of medicine consists in keeping the patient amused until nature has cured the disease; unfortunately ignorance is not a disease that nature cures unaided, and many of the children in our schools are at present far from amused!

Let us consider once again the field of transportation that was discussed earlier. If somebody had been asked to do research about the year 1800 on how transportation could be improved, what would he have done? He might have looked for some improved diet that would give horses greater stamina. He might have sought some way of breeding faster horses. He might have wondered whether coaching inns could be better spaced along the highways, or whether more pliable springs could be installed in stage coaches. In those days, transportation was equine. Transportation was what happened to people when they found themselves on horseback or in a horse-drawn vehicle, just as today education means what happens to children when they find themselves in those buildings that dot the landscape and contain rooms with desks in them. After all, if there is one statement that has stood the test of time and has been borne out by thousands of years of experience, it is that the horse has come to stay. Since the horse was first ridden five thousand years ago, its usefulness has been appreciated all over the world in many different climes and societies, in many different periods of history. Men like Genghis Khan and Buffalo Bill, Dick Turpin and William Cobbett, Julius Caesar and Paul Revere, who would undoubtedly have disagreed on so many other points, would have heartily concurred that there is no better way of getting from one place to another than by horse. So it is only reasonable that, as long as travel depended on the horse, anybody concerned to improve transportation should have sought ways of improving equitation.

But this was not the kind of research that led to such advances as the steam locomotive, the internal combustion engine, and the airplane. While the horse was still without any serious competition, some apparently unrelated things were going on. A man called James Watt was trying to improve steam-driven machinery for pumping water out of mines. Toward the end of his life, Watt began to realize that the steam engine could operate other machinery besides mine pumps, but he steadfastly refused to believe that it had any future whatever for transportation. At about the same time, an eccentric Italian called Galvani was following up some strange discoveries that he had made about frogs' legs. He had found that, if a frog's leg is severed and touched with metal rods in certain conditions, the leg will twitch. Nobody would have thought, least of all Galvani, that when the horse-drawn omnibus and the horse-drawn streetcar disappeared from city streets, they would be succeeded and replaced by an invention that can be traced back directly to these experiments of his on frogs' legs. Could you imagine what would have happened if Galvani had come to some agency responsible for financing research on transportation and asked for help to study frogs' legs? Horses' legs might have been acceptable, but frogs' legs! He might have wanted to work on rats' legs next! Watt, as already mentioned, believed that his own work had nothing whatever to do with transportation. Fortunately, these men did obtain whatever facilities they needed to complete their work. If, however, some agency had supported them and also supported 999 others whose research got nowhere, this might not have been a bad bargain. In fact, there may have been some bonuses on the side. The whole industrial revolution was, in part, a by-product of Watt's work, and, out of Galvani's work came everything that we now know about the workings of the brain and the rest of the nervous system, with all its medical and other implications.

To turn once again to medicine, some individuals toward the end of the 18th century were becoming wrapped up in an abstruse metaphysical problem that goes back to Aristotle, the question of whether living organisms can be formed out of non-living matter—the so-called problem of "spontaneous generation." This highly academic quest led eventually to the experiments of Spallahzani and Pasteur, which led in turn to the germ theory of disease. This theory was responsible for the introduction of hygienic conditions into hospitals and sterilization procedures into surgery. Then came inoculations and finally modern antibiotics, which have more than doubled the life span in civilized countries during the last century and, for the first time in the thousands of years that the medical profession has existed, have enabled medical practitioners to make a substantial difference to the prognosis of an illness. The fact of the matter is that the people whose work led eventually to spectacular advances in the field of transportation were not those who were studying transportation but those who were studying energy and motion. Likewise, the people who made medicine leap ahead were not those who were looking for techniques to prolong life, but those who were studying the nature of life. We can be absolutely sure that the same will happen in the field of education. People doing research in education are doing valuable and indispensable jobs. The spectacular advances that we are hoping for will, however, have to grow out of the work of people who are studying, not education, but learning, who are trying to probe the nature of these processes that we want to bring about in the schoolroom or whatever place we may eventually substitute for the schoolroom, and who are identifying the factors that govern these processes, so that the results educators would like to bring about can be made attainable.

To put it another way, education is ready for what the economist Rostow has called the "take-off." This brings in another analogy, but it fortunately preserves a link with the aeronautical examples that have already been used. Rostow in *Stages of Economic Growth: A Non-Communist Manifesto* defines the "take-off" as

> the interval when all blocks and resistances to steady growth are finally overcome. . . . The forces making for progress, which yielded limited bursts, and enclaves of modern activity, expand. . . . The slow-moving changes of the preconditions period, when forces of modernization contend against habits and institutions, against the values and vested interests of the traditional society, make a decisive breakthrough. . . . Growth becomes a society's normal condition.

That is exactly what must be on the verge of occurring in education. After many centuries during which teachers and educators have worked devotedly, but things have remained relatively static, instructional technique is surely about to enter a period of rapid and dramatic transformation.

The possibilities to be opened up by these developments cannot be judged by what has come about so far. We have all heard about such innovations as teaching machines, computerized teaching, discovery methods, and the new mathematics curricula. These are being criticized as well as praised, and quite rightly. To some extent, they are based on unsubstantiated assumptions. They have many crudities about them. How well they work and when they work is still not known. But it would be absurd to assess what is going to come out of these developments solely in the light of what has come out of their first few years. In the early days of flying, there were two kinds of people that made utter fools of themselves. There were those who said these machines would never get off the ground. If I am not mistaken, Lord Kelvin, the eminent physicist, was one. But there were also those who, after the Wright brothers had shown that heavier-than-air flight was possible, said that these machines had no future. The airplanes of those days were patently absurd. They look absurd to us and they looked absurd to the people of those days for different reasons. They were clumsy-looking contraptions made of wooden strips and oiled silk and wires. If piloted by an exceptionally intrepid and skilled pilot, they might just about reach the other side of the English Channel, but, quite clearly, they were a much less comfortable and satisfactory means of crossing the channel than the old channel steamer. But we know now through hindsight that the airplanes that succeeded them differed from them considerably. Once it had been shown that flight was possible, it was only a matter of time before designers eliminated their flimsy construction and the engines that were apt to stall at any moment.

Exactly the same thing is bound to happen with these innovations in education. We cannot tell what will come out of these movements that have begun, but we can be sure of one thing: they will give rise eventually to developments of which we can have no inkling today and which therefore we are in no position to judge. We have at present no reason to suppose that we are anywhere near finding the techniques that will fully realize the capabilities of the average human brain, any more than, 150 years ago, people were anywhere near the full resources of modern medicine or modern jet flight. We can be sure that we shall find these techniques not by stumbling on them or by haphazard trial-and-error but only by painstaking, patient, and systematic research. We can be sure that changes comparable to those in other fields will take place and that things will be achieved that at present seem quite impossible. That is the important lesson to be learned from those pioneers who are developing the new mathematics curricula and teaching machines and the like. Whether their present methods are as successful as they hope or not is beside the point. What is to the point is that they have questioned assumptions; they have set us new and ambitious goals; they have given us reason, at least, to doubt beliefs that have been taken for granted, such as that children of kindergarten age cannot learn abstract algebra with enthusiasm or that a child cannot be given individual attention without the intervention of a human teacher. And once these points have been made, research, if it is allowed to proceed at all levels from the most pure to the most applied, will in time provide what is lacking.

Some months ago I happened to read a bold assertion made by a Russian professor. He said that if half of the capacity of the average human brain were used to the full, the average person would be able with ease to master 20 languages, learn by heart the 30-odd volumes of the Great Soviet Encyclopedia, and pass with distinction degree courses at half a dozen institutions of higher learning. This is certainly a big claim. I have not been able to find out what evidence he had found to support it! He would presumably be hard put to present a convincing case in its favour. But at the same time there is not a shred of evidence that he is wrong.

Commentary

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The purpose of planning a system of public instruction is to improve its articulation, to rationalize it as a system—but beyond this, to relate it efficiently to the predicted social and economic needs of society and to enable it to change so that it may properly carry out its functions and fulfill society's expectations. In order to do this we employ data, theories, and techniques borrowed from such basic sciences as statistics, sociology, economics, demography, and town planning. We are dependent on knowledge in these areas. In many cases we cannot wait for a sociologist to turn his attention to the social area for which we need data; we must generate it ourselves, and we are pushed to pre-planning studies. Since much of the "pure" research, and even more of the applied research in these areas is directly of interest to our work, we need to have such social scientists on our own staff.

The experience of planners in Europe indicates that soon after detailed planning work is undertaken they run into research problems: inadequate data, crude techniques, or an incomplete understanding of the dynamics of the process. In addition to having inadequate understanding of the social and economic environment, planners lack knowledge of the educational process in the system. At this point, in order to determine the qualitative adjustments of the system which would affect the physical plans, planners feel the need for psychological and curriculum research. But so far, in the highly developed western countries, psychologists (whether experimental or clinical) have not been employed in the planning-research process, not even as consultants. Their work, undertaken in isolation and concerned primarily with an atomistic view of the student (both in terms of learning and of behaviour), has been considered irrelevant.

Dr. Berlyne has pointed out that the relationship between the social and behavioural sciences in education is essentially the problem of the relationship between basic and applied research. Related to this, he has indicated that psychology is the key behavioural science as far as education is concerned. I think this is too limited an analysis and that it stems from preoccupation with the learner in the school system. Although it is obvious that learning is the essential activity in the system, I think we would gain from viewing problems of the system from a larger perspective. Dr. Berlyne's focus is on the individual child. I think, however, that problems become too complex to be approached this way as one progresses in the system. I would say that the concept of basic research must be extended from research in the behavioural sciences to include research on the system itself. I think it is as basic to understand the system-process and the interrelationships of its parts as it is to understand the learning which is going on within the system.

I prefer to talk of "a system of public instruction" rather than "education," since the latter term involves much more than what I have in mind. If we consider schooling as a system of public instruction—organized instruction in groups from pre-school to post-university or adult training—we must view necessary research in a wider dimension than the individual learner. There are at least three categories of data of concern to understanding the system: (1) the individual learner, his characteristics and attitudes, and the teacher, his characteristics and knowledge of learning, teaching, and motivation; (2) the social and economic environment within the school, and within the society; and (3) "policy" within the system and the society-at-large, the political and other regulating mechanisms which affect policy, such as admissions and promotions policy in the system and legal regulations in the society. If we view the whole educational process as a system operating in a society, then basic research has to do with any part of the system and any of the related social, behavioural, and physical sciences studying the system and the learning process. So my greatest disagreement would be with the interpretation of the term "basic." I regard as basic any research which helps us with our analysis technique, even if not applied to this particular system. I regard as basic any increased knowledge of the social and economic environment, or any theory which helps explain some of the unknowns in these areas. I regard as "applied," attempts to apply the general theoretical explanations drawn from the functioning of other systems to the functioning of this particular system. For my purposes, therefore, basic research would include many areas of research in economics, anthropology, demography, and the more commonly accepted psychological and sociological studies, as well as research into administrative and systems analysis theory.

The second point that Dr. Berlyne makes is that the general public has not been aware of the need for research in education, except in terms of immediate application. By and large, I would say that the general public is not aware of the need for basic research in any area. Indeed, basic research is an act of faith. We may learn as much about the system of public instruction or about the learning process from some new discovery in biochemistry as from some new discovery in clinical psychology. However, I think there is general agreement that basic research in certain areas is more likely to pay off for one type of application than another. Basic research in biochemistry is more likely to pay off in public health or medical practice than in education, but we could be wrong in this. Dr. Berlyne has given us historical examples of completely unforeseen applications of basic knowledge. I support entirely the need for basic research, but this is a bit like saying we are all in favour of motherhood. The problem is to assign some priority to problems in applied research in various fields and to establish some balance between basic and applied research.

According to Dr. Berlyne, psychological research should not be aimed solely at specific practical problems but at illuminating the nature of the learning process. I agree, provided we recognize that once we understand the specific mental process going on, we may be as far as ever from solving the problem of its failure in certain instructional situations. At the moment we teach most of our children to read with a fair degree of success, although apparently we do not know what we are doing when we teach children to read. I would agree that we need to learn what this process is. However, even with this knowledge, we may be just as far from finding a solution to the problem of those few who do not learn to read, as we are now. If the failure results from some malfunctioning in the social or economic environment, we need to learn about the link between these two, or if it is failure in the teaching process we need to learn of that link.

Dr. Berlyne implies that changes in the educational system will result from increased knowledge of the learning process. I suggest that most changes in social systems are brought about by forces *outside* the system. Because we are unable either to understand the nature of these changes or to direct them, the school system is constantly faced with the problem of adjusting to change which it can neither predict nor control.

Dr. Berlyne suggests that basic research has to be carried out extramurally, by individuals in a university who take the initiative in deciding what research they wish to do, but receive public financial support for it. Again, I think in our society this is probably true, but we should look at the full implications of this statement. This would seem to mean that public funds are to be used somewhat blindly for research initiated by individuals whose basic motivation is curiosity. Keen, passionate interest in what one is doing is a part of the researcher's make-up, and there is the danger, if we try to direct him too closely, that we will stifle his effectiveness. Secondly, there is the assumption that these creative individuals work best in a university setting. But this is largely a credo. It is true that our universities have been our chief centres for research in the past, but I wonder if this has not been changing in recent years. I know of no studies which actually try to measure the importance of the university in the total research effort in our country. It seems clear that, with the recent expansion of universities, professors with heavy teaching loads and a great deal of administrative work have spent less and less time on research. Also, there are studies which show that, increasingly, research to be effective needs a considerable apparatus and a team of research assistants. These are not always available in the university setting. Certainly, in the physical sciences, the world-wide development of research institutes offers some evidence that much effective research takes place in an institutional setting other than the university. This, of course, may differ from discipline to discipline, but I would suggest that the case of the university setting is not proven. Dr. Berlyne speaks of the importance of freedom from pressure to produce something practical within a short time. With this I heartily concur. Even applied research directed to a specific limited problem needs considerable time to produce the kind of evidence which could be said to solve the problem.

Dr. Berlyne also speaks of the extreme shortage of able people in fields of basic research. I believe this is true; it is therefore imperative that competent people be located in areas where their *research* production, if this is viewed as their most important function, is maximized. I have one small *caveat* in regard to general support for the researcher's freedom to take the initiative in deciding on research projects. If we study the history of research efforts, it is immediately apparent there is a fashion in research efforts. Several groups of scholars in different countries are simultaneously tackling the same problem. To some extent this is a reflection of a felt need; it is also a question of funds. I think that in limiting the range of our interests to those things we know will draw research support and funds, we impose as serious a limitation on our freedom as any outside party does by requesting short-term studies or service reports for immediate implementation.

I see as having value a research institute, such as OISE, which can bring together people from a number of disciplines in a relatively loose organization. This, of course, raises problems of how to keep in touch with one's own field. I would like to mention our attempts to solve this problem. We have two kinds of cross-appointments with the Department of Sociology of the University of Toronto. In one case, a professor will teach for us and for the University. He will also undertake direction of research projects for us. In the other case, we have a professor whose entire teaching duties are in the Department of the University, but who has special research facilities within our Institute. This type of cross-departmental tie might run the gamut from temporary association on a certain research project to a permanent cross-appointment. Nor need such appointments be restricted to our parent university. I have been discussing with the Department of Sociology of York University the possibility of employing some members of their staff and ours on joint research projects. York has a well-established system of released time by which people can teach or direct research elsewhere with compensation paid to the University.

The second arrangement is inter-disciplinary. It involves my Division of Educational Planning in OISE, the Economics Department, and the Department of Industrial Engineering of the University of Toronto. We plan to run an inter-departmental seminar for staff and senior research assistants whereby we report projects to each other, discuss methodology, and generally pick each other's brains. We also have some manpower studies which are of special interest to my colleagues and certain members of these Departments, and we are collaborating on a mathematical model of the Ontario system of public instruction. Our chief common interest is in refining the methodology, particularly in certain statistical problems. In addition to this macro-economic model of the entire system, one of our economists will start, as a divisional research project, some micro-modelling of parts of the system. His models will be so arranged that they form a unit of the larger model.

It seems to me that the really exciting research, basic as well as applied, of interest to my Division of OISE may involve people in universities, in government and municipal departments, and in school boards. We frequently consult and make use of staff in the research divisions of the Provincial Department of Labour and the Provincial Department of Economics and Development. If we were concerned with planning studies on a regional level, we would work closely with the research departments of school boards, the Department of Municipal Affairs, the Department of Transport, and others.

At the moment, the researcher in my Division is free to consult with all these people; but it is becoming increasingly clear that beyond this we shall, from time to time, need to bring some of these people into the Institute to work with us on research projects.

Finally, Dr. Berlyne makes the statement that at this stage the main contribution made by the behavioural scientist will be in raising problems and devising research techniques rather than in providing ready-made answers to the questions already posed by the system. I think few people would disagree with this. This is the function of research in all fields, whether one is trying to improve the population studies on which the forecasting of students, teachers, and other elements of the educational system is based, or trying to understand the market substitution of skills. However, in educational research we have never indulged in much rate-of-return analysis or cost-benefit inquiry. Our funding of research is haphazard and depends largely on salesmanship, fashion, and political expediency. It may be that if someone applied a cost-benefit analysis to some of the work we do, we would be out of a job. Although there is the danger in this type of analysis that the analyst may be too short-sighted to realize fully the benefits of certain research projects, I think it is foolish to expect that this type of investigation can be postponed indefinitely when public monies are at stake.

Commentary

PETER C. DODWELL
Department of Psychology, Queen's University

I notice that I am called an interrogator, not a discussant, in the program, and I take that to mean that I can raise some questions which do not arise directly out of the points Dr. Berlyne made. I find there is a certain difficulty here, since I am in basic agreement with most of what Dr. Berlyne said. I shall have to play the part of devil's advocate and try to bring up questions which I hope may cause some discussion, whether or not they are in agreement with Dr. Berlyne's statements.

First of all, one may agree with the basic point that pure research, or basic research, must go on, and that really important changes in educational theory and practice will probably stem from it; but one may still wonder whether the relationship between this research and educational practice is quite the same as the sort of relationship which holds between basic research in other sciences and its practical application. One reason for saying this is that behavioural scientists, and psychologists in particular, would like to be able to find behavioural laws that apply to all organisms (or perhaps, more modestly, we should say to all organisms of a particular species), and would like to find regularities which, although perhaps not as reliable as in other sciences, are nevertheless regularities in which one can put some faith. Unfortunately, the results of studies with human organisms tend to show a type and amount of variability which seldom, if ever, exists in other scientific disciplines.

It is an educational cliché to say that all children are individuals and have to be treated as such, but I think this is an important point when one talks of applying some of the newer psychological theories, techniques, and research findings, in education. Perhaps I could give an example of what I mean. As Dr. Robinson mentioned, we have done some studies at Queen's University on evaluating the Cuisenaire method of teaching arithmetic. A student of mine compared number-concept development and ability to do arithmetic in children who had been taught by different methods—the Cuisenaire method and the more traditional method. He found tremendous variability in the children's responses and no real evidence that in general one method was any better than the other, although the Cuisenaire method allowed children to develop concepts more rapidly or more adequately than the traditional method. What he did find was that the teachers made an enormous difference. Their ability, their enthusiasm, and their understanding of the mathematics involved seemed to be most important. This suggests that psychologists should wonder not only about basic learning processes in children, but should, perhaps, pay a little more attention to basic teaching processes in teachers.

I have also done some studies on the Suppes sets-and-numbers method of teaching arithmetic, and found basically the same sort of thing. One of the disheartening aspects of this research lies in the apparent indifference of children to elegant theorizing. Behind the Cuisenaire method there lies an elaborate theoretical structure for cognitive development and the description of such development. Suppes' program is aimed at shaping children's cognitive behaviour toward the behaviour of "real mathematicians," in their mathematical symbolism and conceptualization; yet the children seem to be quite immune to such benign influences! They tend to go on answering questions in arithmetic tests in the same old way, neither better nor worse than before they were subjected to the wonders of modern mathematics in an elementary form. Now undoubtedly some children do better on one system of instruction, some on another. But the problem which really concerns me is that, at the moment, we do not seem to have any way of predicting which children are going to do better in one system and which will do better in another. This is a very complicated matter, and I think we tend to neglect the idiosyncratic features of children's behaviour, despite their prominence, because, as I said, we have the image of ourselves as behavioural scientists whose aim is to find regularities in behaviour. But there may be irregularities which we should pay more attention to. In fact, I thought of coining the phrase, "What's sauce for the goose isn't necessarily sauce for the gander," except that we have found no consistent sex differences in our studies of number concepts.

Well, in my role as discussant or interrogator, the first question I really want to ask Dr. Berlyne is: How do you feel you can reconcile the behavioural scientists' demand that you identify and study regularities in behaviour with this fact that, in large measure, children's responses to particular types of experience and to particular people tend to be highly individualistic and idiosyncratic; and do you not think this variability in itself is one of the things which we, as psychologists, should study more carefully? Of course, when I refer to individual differences I am not simply thinking of measurement of individual differences by psychometric tests and their subsequent correlation with other measures of intellectual performance. Rather, I have in mind the investigation of what one might call "cognitive style"—that is, less easily definable aspects of intellectual functioning, perhaps related to what has recently been studied under the heading of "creativity." Perhaps I can give an example of what I have in mind from our studies at Queen's University. Piaget has a very nicely developed theory of the sorts of stages which the child goes through in his intellectual development, and in looking at this we have found that some children are good little Piagetians; they develop in exactly the way Piaget says they should. Other children do not do this at all. They develop in quite different ways, and it seems to me that perhaps what we should look at would be differences in developmental patterns of this sort.

I would like to go back to the analogy that Dr. Berlyne drew between the development of physics and the aircraft industry and point out that his analogy was not quite complete. I think you may have had the impression that he was trying to tell us that all good research, and all research that was going to develop important innovations, should be done by people in universities, and particularly by psychologists in universities so far as education is concerned. But I would like to point out that the development of heavier-than-air flight didn't occur in this way; that is to say, people did not sit down in laboratories and discover the laws of aerodynamics and then apply them in a rational way. What happened was that there were physicists who discovered the laws, and there was a whole breed of other people, often with very little technical education, who went out and tried to fly, as you might say, by the seats of their pants. Sir Geoffrey DeHaviland has recently described some of the earlier experiences in this field in a book that is both instructive and amusing. Whatever else one may say about the matter, it is certainly true that important practical developments are often made by people without much theoretical knowledge. Perhaps this is most true of the early stages of development in a new field of applied science. This, after all, is the position of psychology in relation to education at present: practical applications are only just starting to come about. Perhaps this thought should be of some comfort to educators, that after all teachers in the classroom also have an important contribution to make to educational change!

I might give another example, from the science of optics, as it applies to corrective spectacles and lenses. The science of geometrical optics was developed mainly in the eighteenth century and yet, for many years—centuries, I believe—before this, lenses had been used to correct vision, and quite practical procedures had been developed empirically without any theoretical knowledge at all. Here again, artisans had developed a system that was highly successful without having the theoretical knowledge which subsequently backed it up. I would not deny that the marriage of this practical application, which had no theoretical background, to scientific knowledge had extremely important results in the field of optometry, but still the example shows that it is not altogether true to say that all major advances really stem from the work of the scientist in his ivory tower.

I would like to make one last point: Bruner and his associates have very recently done studies in French West Africa in which they have looked at cognitive processes, cognitive style, in children who live in rather primitive circumstances. They have compared these with the cognitive development and cognitive style of children in a western culture — children brought up in average American homes who attended average American schools, and they have found a very interesting thing. That is that the difference between the thinking processes of children in a typical western school and those of the children in this primitive West African culture who went to school is less than the difference between the thinking processes of the children in the primitive culture who went to school and of those other children, perhaps living in the same village, who did not. This suggests that there is a big advantage in going to a school of any sort, although the factors which bring about this advantage have not been clearly identified. I thought at first that this was a point that I could make against Dr. Berlyne, but I have now decided it is a point in favour of what he said toward the end of his talk: that we have not even tapped one small part of the potentialities for learning and development in children. Maybe what this example shows is that we should try to widen the gap between the primitive school and the most modern school; we should try to widen the difference between primitive education and advanced education to make it at least as great as the difference between those two sorts of primitive children, some of whom went to school and some not. If the factors that occasion the big difference can be identified, perhaps their careful study and manipulation in our own schools would have dramatic effects.

General Discussion

Berlyne:

I don't really have much to disagree with in what the last two speakers said, but there are a few points on which I should attempt some clarification. First, I was not meaning to suggest that improvement in education will come only from basic research in psychology. On the contrary, improvement will come at many different levels.

First, we need the basic research which is going to produce improvements in the long run. (I don't know when the long run is, but it's getting sooner with every century that comes!) Secondly, there is the research that involves looking for practical lessons in the results of basic research, and working out what should be done in the school, or in whatever replaces the school. This has to be done, for the most part, not by basic researchers but by people who are close to the business of education. What I meant to suggest was that at all these stages it might be a good thing to have psychologists involved. They might be able to help, even at the most applied levels as well as at the intermediate stages. They could certainly be brought in more than they are at the moment.

It's true, of course, that we cannot wait for basic research to solve all our problems. We have to find things to do in the meantime, and very often things are discovered which work. There are plenty of examples from modern medical practice. A lot of things doctors do seem to work, and neither doctors nor anybody else knows why they work. Presumably when they know why they work, they will be able to improve on them.

Dr. Watson suggested that the fruitfulness of basic research is a matter of faith. Although this is very often said, I do not think it is true. I think that very basic research is as little a matter of faith as the statement that the sun will rise tomorrow, because if any statements about the future can be made on the basis of what has happened in the past (and of course philosophers still haven't demonstrated this, so the sun may not rise tomorrow!), the fruitfulness of basic research is a well grounded proposition. There have been plenty of examples where basic research has paid off. I don't know any example myself in which it has been applied to actual phenomena and has not, in the end, provided knowledge which has been of practical value.

Dr. Watson also cast doubt on the value of the university as the main place where research has to go on. I must emphasize again that I was talking about *basic* research. The research of the intermediate and more applied levels can go on at different places, but basic research has to go on in universities or places similar to universities. Now it is true that, as she said, universities have to fulfil many different functions. This is something that many people don't understand, including people who make decisions that affect our universities. Universities have to perform many different functions, and some of these functions interfere with one another, especially if planning has not been done with these different functions in view. The particular clashes that occur between teaching duties and research responsibilities are, of course, a case in point, and certainly there are a lot of problems here.

Lastly, I come to the question that Dr. Dodwell raised specifically — the role of variability. I would like to cast some doubt on his statement that there is more variability in psychology than in any other branch of science. If one thinks of human psychology, there are enormous differences among human beings; but I should have thought there wasn't all that much more variability here than there is among the species that biologists study, or the different substances that chemists study. But I certainly agree that variability is important and that psychologists should study it. They have studied it in the past, mostly in ways that have cut their inquiry off from the mainstream of research. Now the time has come for variability to be studied together with the study of general principles. There is no antagonism between the study of general principles and the study of variability. On the contrary, the two are complementary, and there are plenty of examples from other sciences to show this.

One example that I like is that of the chemical elements. There are enormous differences between the chemical elements, but people began to understand these differences and to explain them and to know what to do about them when they discovered laws of atomic structure that apply to all chemical elements. In other words, the similarities between the different atoms account for their differences. And the same presumably will apply to psychology. Certainly one of the needs of education as it progresses is to find better ways of coping with variability, which has always been a bugbear. In most Western European countries this has been done by having different kinds of schools and having "streaming" or homogeneous grouping. There has been a feeling against that in North America, and in the Soviet Union (for rather different reasons). But it may well be that homogeneous grouping is not the best way of dealing with individuality. For example, the makers of teaching machines in their pioneering (and undoubtedly very crude) methods have been very much concerned with giving each child individual attention.

Robinson:
Is there any question or point which the other panel members want to raise? I was hoping that Drs. Berlyne and Dodwell might respond to two other questions which Dr. Watson raised. She claimed that there is no visible relationship between planning and the kind of basic psychological research that Dr. Berlyne was talking about. Secondly, she has gone even further in questioning whether the analysis of individual learning is the proper level of analysis in setting educational criteria. These are very important claims, and if they are not answered the whole case for psychology seems to fall through.

Watson:
I would not say that basic research is not directly related to planning. I said that the basic research in certain social sciences is directly related to planning, that planning calls on the knowledge in *these* fields but not in psychology. It calls, for example, directly on economic theory, industrial engineering, systems analysis, sociology, and demography.

Dodwell:

There is a point that Dr. Berlyne has mentioned on other occasions but did not mention tonight, which is that when we talk about psychological research we should, perhaps, talk about psychological research and development. I think when you say that planning is not related to basic research we might possibly agree with this, but it should be related to the development which might arise out of basic research.

Watson:

I would say that if a planner formulated basic research questions for the psychologist, the ones which are of immediate concern would not be those related to basic learning theory. But let's take this question of variability which Dr. Berlyne was just dealing with. It seems to me that we approach the whole phenomenon in two quite different ways. You are concerned with our knowledge of variability in order to accommodate individual learning capacity, so that we undertake homogeneous grouping or some other method for the most efficient learning.

Berlyne:

Not learning capacity. Learning capacity is only one of many different kinds of differences or forms of variability. You have to take that into account.

Watson:

I would suggest that when the point at which we can take account of all the human variabilities is reached, there will still be social purposes advocating certain groupings, or not advocating certain other groupings. In our school system, as in any other social system, we have social conflicts and social problems to which the knowledge of a learning process is irrelevant. Part of the grouping of people in terms of learning has to be a social function, and not merely a learning function.

Robinson:

Dr. Watson, you spoke of the planner posing certain questions for the psychologist. Is it not conceivable that if educational planning ever got away from its present preoccupation with the manipulation of conventional knowledge to arrive at fairly conventional solutions, that it might be quite likely that the psychologist could not only suggest behavioural goals which the planner should aim at but indicate how those goals might be achieved, as well? Isn't this precisely where the kind of dramatic breakthrough that Dr. Berlyne is talking about would come into play? Is it not true that planning, in the sense that we have been talking about it at this conference, has had to do with the production of so many engineers, so many technicians, or so many people who will proceed to a certain point in the conventional educational system? Why can't we plan in terms of so much cognitive growth, or such and such an increase in the ability to think divergently? Is this inconceivable?

Watson:

I suggest that the reason why planning is on these conventional terms is because this is the way the system is formulated at the moment, and that is what a planner is concerned with — the formulation of a system and its reaction and sensitivity to certain needs. Now the point at which the planning process breaks down, it seems to me, is that psychologists do not provide us with enough reliable information on which to undertake planning in terms of vocational learning, in the same way that we can undertake physical planning. You cannot say, for example, with some degree of reliability, that a certain proportion of your age group has this type of learning capacity. Therefore, we cannot plan on these terms. For this reason it seems to me that the basic research in psychology is not research to which we can look for data with which to plan. We are planning for a system, that is true — a system as it exists now.

A Presentation of the Concepts of OISE

R. W. B. JACKSON
KENNETH F. PRUETER
GEORGE E. FLOWER
W. G. FLEMING

Concepts and Structure

R. W. B. JACKSON
Director, The Ontario Institute for Studies in Education

It is my privilege to introduce the discussion of the concepts and structure of The Ontario Institute for Studies in Education, a body without an exact counterpart anywhere else in the world to the best of my knowledge. The specific ideas related to research studies and experimentation will be described by Dr. W. G. Fleming, the Coordinator of Studies; those related to instruction by Dr. G. E. Flower, Coordinator of Graduate Instruction; and those related to curriculum development and special projects by Dr. K. F. Prueter, Coordinator of Curriculum Projects and Special Services (who is also, at present, the Director of the Ontario Curriculum Institute). My task is to attempt to give you some of the essential background against which these other presentations may be viewed. Since time is strictly limited, I will focus attention on what seem to me to be the key elements or bases in the whole process of educational change.

The Necessary Climate for Change

The *first* element is the existence of a climate for change, based on an awareness of the need for change and an acceptance of the consequences in terms of deliberate and conscious planning for alterations in the educational structure and processes. Naturally, such a climate for change does not arise from the school system itself; nor can it exist in it in splendid isolation. The roots lie in social and economic needs and demands, although there must obviously be also a readiness for change within the educational system, or more exactly, on the part of educators in key positions. In Ontario, we have been fortunate in that all these forces have been present and recognized, and their emergence coincided in time in the proper sequence.

I refer, first, to the pressures or forces arising from social and economic changes, which in our province were early and clearly recognized by the Government, more particularly the impact of technological developments in industry and commerce, as well as scientific advances generally. The policy of the Government has been stated to be that it accepts and welcomes such fundamental changes, as being in the best interests of, and leading to progress in, both social and economic affairs. However, rather than passively await the emergence of such forces, and consequently vainly attempt to cope with each in turn on an ad hoc or piecemeal basis, the decision was made to attempt to anticipate, plan for, and guide such developments. It was recognized at once, and so stated, that the major means for effecting such planned development lay in education, at all levels of our publicly-supported school system, and that what was required was — or perhaps I should say probably would be — deliberate alterations of, and innovations in, the educational structure, with primary emphasis on the school program, the curriculum and courses of study, and the instructional techniques and practices. Further, it was just as clearly recognized and forcefully stated that the key to educational change, and consequently to orderly social and economic change, lay in research and development within the educational process itself. In brief, a mechanism for proper and adequate change had to be built into the school system, and — with proper safeguards — provision made for a process of continuing change in education.

Such a clear and explicit recognition and acceptance by the provincial Government is, in my opinion, the key factor in the whole change process. We were fortunate in this respect in Ontario; doubly fortunate, as it turned out, in that our Minister of Education not only accepted this principle but had himself been eagerly seeking, and somewhat impatiently at times insisting upon, a thorough evaluation of education in Ontario and the introduction of new ideas, concepts, techniques, materials, and aids, wherever such innovation promised to improve the instruction of our children. (He has personally visited most countries this side of the Iron and Bamboo Curtains in search of ideas, as many of you know.) I think we can pay tribute to the leadership and drive exhibited by Mr. Davis, without question of revealing any particular political bias. In fact, what he has initiated has been accepted gladly by all political parties in our province. Looking back over the recent past, it is probably only a slight exaggeration, if any, to state that he has within a period of a few years introduced as many fundamental and progressive changes as did his illustrious predecessor, the Reverend Egerton Ryerson, over a period of thirty years. (Of course, Ryerson had to prepare the climate as well as develop the changes!)

There was present, however, the *second* key element in the climate for educational change: a readiness, even eagerness, for change on the part of those responsible for the public system of education — teachers, trustees, and parents. In fact, the professional associations of both teachers and trustees had been actively engaged in some very significant research and development activities, and not only within each of the organizations. The strength of the desire for a new and improved educational system is perhaps best exemplified in the formation of the Ontario Curriculum Institute about which Dr. Prueter, I know, will deal more fully and adequately. May I point out three very significant features of this venture: first, all levels of the school system combined forces to review the program at all levels (elementary, secondary, and university); secondly, it was a joint undertaking by teachers, trustees, universities, and government (and an American charitable foundation) to evaluate and improve the courses; and thirdly, they placed their treasures along with their hearts by giving generous financial support. Certainly, it represented the most significant move toward self-improvement in our educational history; unfortunately, the financial resources proved insufficient for the job, despite the grant of $350,000 from the Ford Foundation and modest contributions from Canadian industries and foundations. Nevertheless, it *was* successful and did much to prepare the way for its successor. Still, the job proved to be so immense and costly to perform that only the Government could undertake it. One must always remember, though, that without this prior "grass-roots" interest and effort there would not have been the existing ready acceptance of the aims and programs of our new Institute.

The Structure of the Institute

The provincial Government had to establish a machinery for research and development in education, designed as far as possible to ensure success from the outset. The pattern adopted is extremely significant, drawing as it does upon those elements which had proved most successful here and elsewhere. In the first place, to ensure that unfettered search for truth without which any progress would be unlikely, our new Institute was established as a *college* under an independent Board of Governors, incorporated by special Act of the Legislature of the province and financed through a special vote each year by that body. All the strengths of the university system were sought, obviously, but to this were added other special features. Note, in the second place, that the Board of Governors in its membership is representative of all key segments of the school system: teachers, trustees, universities, directors of education and school superintendents, officials of the Department of Education, teacher training institutions, the general public as "residents of Ontario," and members of the instructional and administrative staff of the Institute. From the beginning, therefore, there exists multiple sponsorship of its activities — an approach which was extended in other ways. Observe, thirdly, the multiple-purpose nature or multiple approach: the Institute is to instruct, to study educational problems, to disseminate information, and to assist in the implementation of findings. No ivory tower in glorious isolation, this new Institute, but with its roots firmly embedded in the realities of the school and classroom! Finally, in recognition of the complex nature of all educational problems (most may have even stronger psychological and sociological overtones than purely pedagogical), the approach adopted for any project will normally be the joining of forces from all affected, or from all who can contribute. One may use the term "interinstitutional" to denote that the efforts of other agencies will be enlisted (universities, teacher associations, trustee associations, for example); likewise, one may use the term "interdisciplinary" to describe the "team" approach adopted in the design of studies, projects, and experiments. We plan to draw heavily from related disciplines within our university family, for instance, whether it be in curriculum design or in pure research, in studies or in implementation of findings. There is here a very real, although perchance belated, recognition of the many facets of the personality — and the need to consider the child as a whole, living organism, not merely as a learning machine while he is in school. The force of the argument is very evident when one turns to the solution of the problems of disadvantaged children. Do the roots of the trouble lie in poverty, in cultural expectations, in environmental conditions, in patterns of behaviour, in attitudes, or in our ignorance of the laws of learning — or in all of these, and more besides?

The Task Ahead

In conclusion, let me stress the fact that we fully appreciate the task before us is an immense one. One does not simply say "change" and thus cause change to take place. We must study the process of change itself more thoroughly and competently, perhaps, than we have ever studied any problem before—and we have started to do so. Dissemination of our findings, for example, does not mean publication alone. Far from it; we must demonstrate in many classrooms, and we must teach, and re-teach, to ensure that the findings are understood. Hence, the stress within our Institute on a unity of approach and a marshalling of all forces, across the boundary lines which may seem to exist, and vertically through all the means and techniques that all of us may possess. We know that in the implementation process, too, one does not simply order or proclaim, one must lead, and enlist the help of the natural leaders — the change agents, so to speak — within the system itself. We must work closely, and with full disclosure of our findings and plans, with those responsible for the operation of the system: from the Minister and his officials provincially, to the director of education or superintendent and his officials municipally, and above all, to the principal and his fellow teachers of the schools within which our children live and learn. Unfortunately, there is a grievous shortage of these highly qualified leaders or change agents; we must instruct and educate them, even while the process of change goes on. Fortunately, we have the statutory power and duty to do so and have been promised the means, so undoubtedly a way will be found.

We know full well, though, that the road before us is rough and stony, and that it will be several years before the full effects of our efforts become apparent. Still, we know what has to be done, and we believe we can do it. We must, however, ask for your patience and your understanding, as well as for your support in other ways. Research and development in education, as in other sectors of our economy, is a brand-new element. It is devoted to the *acceleration* of change; it constitutes a massive assault on innovation; it is a deliberate commitment of a large number of scholars and highly trained technicians, deliberately organized into a compact unit to search for new knowledge and techniques, *and* required to develop the new for practical use immediately. Our new Institute, therefore, represents a completely new force in education. The potentiality for radical change is tremendous, but the actual effects — and whether for good or for ill — remain to be seen. We in OISE have few, if any, doubts; the rest of the community may well exhibit some signs of apprehension and doubt until this new force has demonstrated itself. Any institution such as ours which is primarily devoted to collapsing time in the evolutionary process, in the sense of producing innovations and causing their immediate application, may well expect to arouse suspicion and even resentment, at least at first. Change may be painful for us, while being beneficial for our children. (Parents have been unhappy about the new mathematics and the new social studies courses; our children seem to love them.) As one of the ancient ones, from an era of which few alive today have any real knowledge or understanding, may I point out that this is indeed a topsy-turvy world of the future which we face: work is no longer morally right and idleness morally wrong; education is more valuable than experience; our salaries as professionals should probably decrease with age—but research, thank God, is still wonderful!

Curriculum Projects and Special Services

K. F. PRUETER
Coordinator of Curriculum Projects and Special Services, OISE

Any consideration of the concepts which will guide the Office of the Coordinator of Curriculum Projects and Special Services in OISE must start with a re-statement of the concept of the Ontario Curriculum Institute to be found in the records of the founding conference of the latter Institute, dated November 2, 1962:

> *Be it resolved that*
>
> (a) This Conference, recognizing the importance of and need for further systematic research and development of curriculum at all levels, approves in principle the formation of an institute for curriculum study as a continuing body to study all phases of curriculum from the standpoint of content, sequential organization and the nature of the learning process and to suggest planned revisions in the light of the rapid development of knowledge characteristic of our times.

This was transposed into an instrument for administrative action by granting of a Charter for the Ontario Curriculum Institute, whose objects are as follows:

> In the interest of the advancement of education, to study and to promote study of all phases of the curriculum in the Schools and Universities of Ontario from the standpoint of content and the nature of the learning process and to disseminate the results of such study.

These aims and objectives envisaged the Institute taking a synoptic view of education from Kindergarten to University and also viewing in the same manner the

> interdependence of the various disciplines latterly. It was also envisaged that the Institute would provide a means of translating findings into concrete practice, and finally of communicating these to not only that portion of the public engaged in education, but in a broader sense to all parts of the community.[1]

It is therefore clear that those who urged curriculum studies, and those who brought the Ontario Curriculum Institute into existence, envisaged provision for competent studies — studies which would involve all *concerned* people, and studies which would utilize all of the steps and techniques of development, testing, evaluation trial, demonstration, and communication.

The March, 1965, Minutes of the Board of Governors of the Ontario Curriculum Institute record the decision: "That the Board of Governors of the Ontario Curriculum Institute approve in principle the formation of an Ontario Institute for Studies in Education and express their willingness to participate."

The On-Going Program to be Administered by The Ontario Institute for Studies in Education

The decision to merge with and become part of a larger educational Institute was a unanimous decision of members of the Board of Governors of the Ontario Curriculum Institute. Subsequent to that decision, the Board has planned for logical and sequential additions to its curriculum program. These program extensions and additions have been discussed with the Director and staff of OISE, so that they will fit in with the plans of the new organization. In some cases, phase one of the studies has been launched by the Ontario Curriculum Institute on the understanding that subsequent phases will be assumed by staff members in the Studies Divisions of OISE. Examples are the study on the organizational change process which later will merge into the work of the Division of Educational Administration, and the study on cognitive development which will become part of the program of the Division of Applied Psychology. The merger of the Institutes will, therefore, be a continuation of a smoothly running operation, with no change of purpose or direction, with no change in the involvement of teachers and other key educators, and with little, if any, change in actual personnel.

Studies in the following fields are either being carried out or are projected by the Curriculum Projects and Special Services office:

1. The Creative Arts
2. Social Sciences
3. Natural Sciences
4. Mathematics
5. Language Experience Approach to the Teaching of Reading
6. Objectives in the Teaching of English

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[1] From *Concept of the Institute*. This document, bearing the date April 5, 1963, has been regarded as a formal statement representing the culmination of discussions at the founding conference of the Ontario Curriculum Institute.

7. Implementation of Change in the Classroom
8. Modern Languages
9. International Curriculum Study
10. Teaching for International Understanding
11. Education for Industry and Commerce:
    (a) Post-Secondary Schools
    (b) Technical and Vocational Education
12. University Study
13. Theories of Instruction and Cognitive Development
14. Behavioural and Environmental Studies Relating to School Design
15. Data Processing Feasibility Study
16. Computer-Assisted Instruction

In addition, two functions in communication within OISE will be under the direction of the Coordinator of Curriculum Projects and Special Services. These are editorial services and publications, and a computerized registry of schools.

In all of these studies, certain principles of procedure apply. To begin, the Coordinator of Curriculum Projects and the Head of the Division of Curriculum Research and Instructional Techniques submit a proposal for a study to the Academic Council, to the Director, and to the Board of Governors. After approval has been received, the Coordinator and the Division Head work with a small group of people to create a study design, which involves determining what is to be studied and how. The Coordinator and Division Head then establish a Curriculum Committee composed of teachers from elementary schools, secondary schools, and universities; teachers from related disciplines; teachers from teachers' colleges; non-teachers as deemed necessary, such as psychiatrists and business executives; and finally, curriculum personnel from the Department of Education.

A staff secretary is appointed to this Committee to assist it and to handle all the administrative work, as well as to serve as liaison officer with other Divisions and the Department of Education, through the Coordinator.

The Curriculum Committee in the next step prepares a detailed study plan. It also plans the winter and summer work program, and integrates research work into the total study. (Publications may be recommended at any point after this stage has been reached.) The Committee then prepares a report as a guide for action and for communication projects.

The Committee develops and prepares material for field (i.e. classroom) trials. In this, the Coordinator, with the advice of the Committee, selects schools and classrooms for the development and testing of materials, as well as for demonstration purposes.

Field consultants from OISE help in the organization of elementary and secondary school development through the establishment of Testing and Demonstration Centres. These are established in cooperation with the area superintendent in the Department of Education, the local school authority, and the nearest Teachers'

College (in the case of the elementary school) or College of Education (in the case of the secondary school).

Planned programs for wider implementation and demonstration activities are organized by the Deputy Minister of Education, the Director of OISE, the Co-ordinator of Curriculum Projects, and the Head of the Division of Curriculum Research.

Graduate Programs

GEORGE E. FLOWER
Coordinator of Graduate Instruction, OISE

One of the central objects of the Institute is to offer programs leading to graduate degrees in education. In fact, the need for more and better graduate work in the field of education was one of the forces which gave rise to the establishment of the Institute.

One of the three pre-existing entities which formed the nucleus for the Institute was the Department of Graduate Studies of the Ontario College of Education, University of Toronto. Indeed, the first earned doctoral degree to be established by the University was not in classics or ancient history, but in education. In 1894, a program leading to the degree of Doctor of Pedagogy was inaugurated, antedating the Doctor of Philosophy by three years. In the past two years some three hundred candidates completed master's degrees in education, and ten fulfilled requirements for the doctorate; these accounted for almost one-sixth of all graduate degrees conferred by the University of Toronto.

Nevertheless it has become increasingly clear that the need for persons in education with advanced qualifications greatly outruns supply. Since World War II, an urgent annual problem in Ontario and elsewhere has been to prepare enough teachers to staff the schools. In our preoccupation with that problem, the important matter of advanced graduate preparation for specialist and leadership posts in education has tended to be pushed aside. Further, graduate students in education are drawn for the most part from the ranks of experienced teachers, who number more than 190,000 in this country; there are more school teachers in Canada than medical doctors, lawyers, dentists, engineers, architects, and several other occupational categories put together. In Ontario alone there are nearly 75,000 teachers this year, of whom an estimated 16,000 are eligible for and encouraged to undertake studies at the graduate level. It seems certain, then, that there will continue to be large numbers of applicants for graduate study in education.

I should like to say a word about three of the concepts which are central to graduate programs in the Institute: first, university relationships; secondly, specialization; and thirdly, the interlocking of research and graduate instruction.

University Relationships

It was anticipated from the earliest stages that the Institute would set aside its powers to grant graduate degrees in favour of affiliation with a well-established university. To attempt to go it alone would be foolhardy. Accordingly, an agreement of affiliation is being entered into with the University of Toronto, for purposes of graduate instruction. This means that graduate programs of the Institute are graduate programs of the University; and the Graduate Department of Educational Theory of the University, which is based substantially in the Institute, is subject to all the rights and privileges, as well as all the responsibilities and controls, of any other department of the School of Graduate Studies. There are many advantages for the Institute in this relationship. Not only does it provide continuity for students already on the way to University of Toronto graduate degrees in education; not only does it ensure that graduate programs in education shall continue to share in the sound reputation of University of Toronto programs, which generally enjoy considerable respect in Canada and abroad; but affiliation with the University provides ready access for Institute staff and students alike to the vast concentration of resources of scholarship in the University of Toronto (including the Ontario College of Education). The University includes a wide variety of specialized fields of advanced study bearing on our eclectic fields of education. Students in the Institute are also University of Toronto students; professors in the Institute are also professors of the University of Toronto.

A basic concept of the Institute, then, is that while it is independent under an independent board of governors, it is at the same time intimately associated with the University.

It would probably be more accurate to say "universities," for formal affiliation with the University of Toronto in this fashion does not rule out a variety of mutually helpful relationships with other Ontario universities engaging in programs in education. For example, if University A so wished, a student proceeding to one of its graduate degrees in education would be welcome to undertake a portion of his program in the Institute; again, if University A so wished, the Institute might be able to make specialized staff available part-time to assist in that university's instructional program; further, under some circumstances, graduate courses completed at another university may be credited toward a master's degree in education at the University of Toronto. Indeed, perhaps a long-term, desirable arrangement would be for agreement among various institutions each to concentrate in specific sub-fields or at various levels of graduate study in education. The range of possibilities for cooperation with other institutions is broad.

Specialization

Secondly, the Institute, with its nine Divisions at present, represents a definite move in the direction of specialization in depth in graduate programs as well as in research. To us, this trend toward increased specialization seems inevitable. The plain fact is that knowledge has exploded, and continues to explode, in all fields and sub-fields. The deliberate plan of the Institute is to make specialized staff and resources available to pursue problems — and to prepare students to pursue problems — in depth. This applies whether we are thinking of Applied Psychology, or History of Education, or whatever. At the moment we have thirteen specialized programs available to advanced graduate students.

Is this wise? Is there not a danger in a world of specialists that there will be nobody to serve the vital unifying and coordinating role of the generalist, who takes the large total view, rather than the narrow specialized one? Perhaps. But for better or worse — and we believe for better — the question which has been uppermost in our minds in designing the structure and programs of the Institute is not how far can we spread learning, but how deep can it go.

One of the suggestions mentioned this week is the possible need for a different order of specialization, in terms of the deliberate preparation of some students for careers as research workers, of others for careers as "middle men" or change agents further along the pure-research-to-actual-production continuum. To date we have not thought in terms of specifically designed programs of specialization of this sort, although clearly the program of each individual doctoral candidate is unique, with emphases varying according to his own particular skills and interests. Perhaps, however, this is a direction in which we shall need to move in the future.

Interlocking of Research and Graduate Instruction

A third concept underlying our graduate programs in education is that graduate studies and research go hand in hand: the former, without the latter, is a contradiction in terms. Realizing this concept requires a substantial concentration of resources — far more than has previously been dreamed of, in Ontario at least. The Institute constitutes recognition of the fact that, in education as in other dynamic fields of theoretical and applied scholarship, substantial concentration of resources is necessary for effective programs of graduate study and research. The day of the single scholar, working alone in an attic, is pretty well past. What is now required is a team of scholars, representing various specializations and sub-specializations, working together.

The Institute has been staffed with this concept in mind. Graduate instruction is not something which a research staff undertakes in what time it can spare from research, nor is research something which a teaching staff is supposed to undertake in what time may be left over from teaching. Staffing is planned to provide for both teaching and research as first priorities.

From the point of view of the student, research and development constitute a vital part of his program. The great majority of our doctoral students and many full-time students at the master's level will, in fact, hold ten-hour-a-week appointments as graduate assistants. Such an appointment is advantageous to the student in two ways. First, the stipend for the academic year (some $3,000, the majority at $4,500) goes some distance toward meeting the financial needs of the student, having in mind that most graduate students in education are relatively mature with the income, family, and other responsibilities which accompany that maturity; in fact, we hope to be able to establish a year hence about fifteen graduate assistantships at $6,000, in an effort to make graduate study more realistically possible for those already occupying $12,000-a-year posts.

Beyond that, however, as a graduate assistant the student becomes actively involved at a professional level in actual research and development projects of the Institute in the particular field of his special study interest and in intimate contact with one or more senior faculty members. While such involvement does not show up formally on the student's transcript, it is probably one of the most valuable learning experiences he has during his period of graduate study.

Substantial funds are available for graduate assistantships, and more must become available; for we are convinced that anything less than full-time study, for a person undertaking an M.A. or Ph.D. with their component research requirements, is completely unrealistic. Our M.A. requires at least a year of full-time study, and the Ph.D. two years beyond that. We continue, however, a series of M.Ed. programs which may be undertaken by part-time students. These programs are designed chiefly for the further professional development of practitioners. Our M.Ed. is a practitioner's degree, not a research degree. For most candidates it will represent a terminal point of formal graduate study, though some may subsequently undertake additional study leading to Ph.D. candidacy.

Finally, may I say that all of us are, of course, concerned about strategies which are most likely to prove effective in actually influencing educational practice. This has been the burden of our discussion for the past three days: the raison d'être for this conference. We in The Ontario Institute for Studies in Education are convinced that — while this takes place — perhaps the most fruitful avenue of all for influencing educational thought and practice will be through our graduates.

The Research Program

W. G. FLEMING
Assistant Director and Coordinator of Studies, OISE

The Director of The Ontario Institute for Studies in Education, the Coordinators, and a few staff members associated directly with them, are involved to varying degrees in research activities. But the main part of the research program is carried on by members of the Divisions organized for research, development, and graduate studies.

Sources of Inspiration for Institute Studies

Three sources of inspiration for research activity may be recognized: (1) individuals and agencies outside the Institute, (2) Board members and fellow staff members, and (3) the professional staff member himself. It is extremely important for the success of the Institute that a proper balance be established among these sources.

It is intended that professional staff members will exert considerable effort to establish and maintain close contacts with educational practitioners in a variety of positions and with a wide range of responsibilities. These contacts will be established in part by involvement in service activities such as giving addresses, serving on committees, participating in conferences, workshops, and seminars, and visiting administrators' offices and classrooms. The basic impulse leading to direct association with the field will be the realization that the purpose of the Institute is to link research with constructive innovation in the actual process of education. As a result of the close association between its staff members and the educational system, the Institute will receive many requests to undertake research studies. Such requests may be made to any professional staff member who will, of course, secure whatever internal authorization is required before committing the Institute's resources. Outside agencies will of course be encouraged to direct requests of major dimensions to the Board of Governors, the Director, or one of the Coordinators.

Dealing with outside requests will of course involve certain difficulties. One suspects at the end of the first year's growth that it will be an almost hopeless task to increase the staff quickly enough to deal adequately with even the important educational problems. Resources never seem to match the need. Thus it becomes most desirable to concentrate efforts where they will do the most good, and to avoid getting entangled in unresearchable problems, trivial problems, problems calling for merely administrative action, problems that could be solved only by the expenditure of an unreasonable amount of time and effort, and problems that could be solved only over such a long period of investigation that the study would fail to serve the intended purpose. It must be an Institute objective to increase general understanding of the potential contribution of research, so that neither too little nor too much is expected of it.

It would be undesirable if a small group, either in the Board of Governors or among those at the upper administrative level, saw it as their business to select the problems for study and to command the services of the remainder of the professional staff to perform them. Such an approach would represent an abuse of power in an academic institution. It would waste and destroy resources of initiative and creativity among competent professionals and be most destructive of their morale. The inevitable consequence would be to drive away the best potential contributors to the Institute's objectives and make it impossible to recruit satisfactory substitutes. Those who remained would be uninterested producers of mediocre work.

On the other hand, it is equally unrealistic to expect a significant contribution from a collection of individuals dreaming up projects in isolation and following their own impulses with no meaningful reference to their fellow researchers. Fruitful ideas originate and develop through contact and communication. Furthermore, real hope for educational advance rests on the possibility of conducting large-scale assaults on major problems. The necessary integrated patterns of research projects call for teamwork, which means a sharing of responsibilities and obligations and a certain willingness to subordinate individual concerns to the commitment to a major cause. The method of operation indicated is that of co-operative planning for comprehensive, coherent research programs. And while the crass exercise of authority among professionals is obviously destructive, there is evidently a compelling need for positive leadership and influence by intellectual persuasion.

One frequently encounters the idea that every researcher should be completely free to choose his own activity. We have visions of an Edison or a Salk working away by himself on an invention or discovery that will transform the world. But, even in the universities, such a stereotype is out of line with reality. It comes closest to representing the situation in the humanities and the social sciences where, perhaps significantly, research has made the smallest contribution. The discoveries that push back the frontiers of knowledge are now largely made by teams of researchers with massive supporting resources.

In view of these considerations, it is perhaps unproductive to attempt to distinguish clearly between inspiration for research arising from one's fellow members of the Institute and inspiration arising from one's own experiences and mental processes. The staff member who has the best interests of the Institute at heart will throw himself into a project because it is based on a *good* idea, regardless of where it came from. And if, as the staff of the Institute grows, close contacts are developed and maintained with the field, the need for outsiders to make direct requests will diminish, simply because such requests will be met increasingly by the response that the problem in question is already under study.

There must, above all, be no prevalent impression that there are two categories of problems, those of the researcher and those of the teacher. The researcher and the teacher may see problems from different vantage points, they may suggest different approaches to their solutions, they may assign them different priorities, but they remain the same problems. If this point of view is justifiable and accepted, teachers will feel that researchers are their natural friends and the supporters of their constructive ideas.

One of the most promising types of projects is that in which the Institute and an outside agency combine their perception of a problem in planning the attack on it, and combine also their technical competence and other financial and human resources in the attempt to arrive at a solution. Some of the studies in the Field Services Division are of this kind, as are those that will result from the co-operative relationship established between the Division of Educational Administration and the Ontario School Trustees' Council and between that Division and the Ontario

Teachers' Federation and the Trustees' Council, in a joint project. In such instances, there is a maximum opportunity for the co-operating agencies to understand each other's outlook and to develop mutual respect. There is also a good chance that the results of the combined effort will have a real influence on practice. These advantages greatly outweigh the handicap of having to spend what often seems an inordinate amount of time in negotiations, discussions, and committee work, and of having to communicate across a certain distance when the participating individuals are scattered around the province.

Basic or Theoretical and Applied Research

It is easy to use the terms "basic," "pure," and "theoretical" research, on the one hand, and "applied" research on the other, but not easy to use them as an aid to clear understanding. Matters are not helped by the rather general tendency to equate them respectively with such expressions as "devoid of any useful implications" and "practical." While it is, of course, quite true that a theory may be devoid of useful implications, the process of theory-building may also be the best way to approach the objective of improving educational practice.

A theory is an explanation on a more or less general level developed by observing isolated phenomena and determining their interrelationships. Because it is constructed from assumptions, which by their nature are rather uncertain building blocks, it is typically an unstable structure, subject to alteration or demolition as a result of further observations and thought. But, if it is based on solid and competent investigation, it provides, at least temporarily, a guide for a further advance toward the frontiers of truth. It also enables the person who accepts and uses it to deal with events and circumstances intelligently and efficiently. Every human being acts on the basis of theory, however rudimentary. The educational researcher cannot avoid theoretical studies. The real question has to do with the level of generality at which he will operate.

An organization like OISE must be prepared to give service by solving immediate problems with limited implications and of intense, if ephemeral, interest. But it must keep such activities within limits lest they swamp it and lose for it the opportunity to solve more general and fundamental problems that call for a more highly theoretical approach. This is not to say that resources should ever be poured into studies that fail to offer at least some remote prospect of implications for practice. This kind of activity can be justified within the basic university disciplines, but, since education is an applied field, the scope of its research concerns should be more limited. What must be guarded against is the danger that practical applications will be expected to be immediately obvious, or expected too soon or with too high a degree of certainty at the outset of the investigation.

The Balance of Interest in Different Areas of Education

It would be fruitless to seek general agreement on the amount of effort that should be exerted to solve problems in different areas of education. There is a variety of opinions, reflecting the outlook and experiences of those who hold them, about what the most serious problems are. Although there may be general acceptance of the view that study should be directed mainly at the characteristics of the learner, the nature of the learning process, and the type of learning experiences that will lead most effectively to the achievement of certain goals, the framework within which agreement exists is so broad as to provide little help.

The names of the Studies Divisions of OISE are not intended to be a direct indication of where the organization's research interests are chiefly centred. There is no inherent reason why the Divisions should be equal or nearly equal in size or why the extent of their research programs should be comparable. They are intended to represent foci of interest rather than an equal apportionment of the terrain. And even an approach organized on the present divisional basis would be unrealistic, if there were not many opportunities to cross interdivisional boundaries in the conduct of joint projects.

The research program for 1965-66 inevitably reflects the lack of balance existing in the activities inherited from the Department of Educational Research. There is perhaps an undue emphasis on test development, on statistical surveys, and on activities that might be relevant to the work of high-level decision makers. This situation has been inevitable because of the carry-over of responsibilities assumed over the years. It must also be kept in mind that the Head of the Division of Applied Psychology did not assume his full-time responsibilities until January, 1966, and the Head of the Division of Curriculum Research and Instructional Techniques did not assume hers until April of the same year. In 1966-67, a much increased emphasis on these areas of crucial concern may be expected to change the entire complexion of the research program. The beginning of the development of a strong philosophy section in the Division of Educational Foundations will also add a needed dimension to the program. A further extension of the Institute's scope will occur when the Division of Adult Education gets under way.

Divisional Interrelationships

A different approach to organization might have dictated the merging of some Divisions that are now separated, and the separation of some sections that are now combined in a single Division. Future development is likely to lead to the creation of more rather than fewer Divisions. But in a sense education cannot be fragmented. If organizational convenience calls for the definition of a number of units, particular care must be taken to ensure that narrow interests do not prevail. The results would be unnecessary overlap and concentration on studies of limited scope at the expense of those dealing with really fundamental problems.

Some of the measures being taken to ensure against the dangers of excessive divisional isolation are these: (1) frequent meetings of the Studies Group, which consists normally of Division Heads, Coordinators, and the Assistant Coordinator of Graduate Instruction; (2) provision for professional staff members to work across divisional boundaries according to their interests and capacities; (3) the organization of interdivisional projects; (4) the formation of interdivisional committees. There are not yet as many interdivisional projects as there should be, but these may be easier to organize as the number of staff members increases. At the same time, the increase in staff could tend to have the effect of making the Divisions more narrowly self-sufficient unless countermeasures were taken.

One pair of Divisions with a great deal of common interest consists of Educational Administration and Educational Planning. Applied Psychology is closely entwined on the one side with Measurement and Evaluation and on the other with Curriculum Research and Instructional Techniques. Information and Data Systems needs close links with all Divisions concerned with quantitative research procedures. The Field Services Division may uncover any kind of research interest in the field, and may have to solicit assistance from any or all of the other Divisions.

Co-operation among Divisions has been excellent. The competition to excel by luring outstanding staff and by devising creditable programs has appeared to reinforce rather than damage constructive relationships. An outstanding advantage during the first year has of course been the stimulating influence of the unprecedented opportunity to build creatively. More severe tests will come later.

Other Views on the OISE Concept

S. C. T. CLARKE
K. V. PANKHURST
SAM SIEBER

The Alberta Proposals

S. C. T. CLARKE
Executive Secretary, Alberta Teachers' Association

Alberta educators accept the OISE concept. One evidence of this acceptance is the number of Alberta educators on the staff of OISE. A second evidence is that Alberta proposals closely parallel the OISE concept. Proposals for an "Educational Research and Development Institute" made by the Alberta Teachers' Association during 1965, and for an "Alberta Educational Studies and Development Council" made by the Alberta Advisory Committee on Educational Research in 1965-66, which follow, will indicate the similarity in our thinking.

The Alberta Teachers' Association Proposal for an Educational Research and Development Institute

In 1964 the Alberta Teachers' Association started a project on long-range plans. The proposal for an institute was presented to the Minister of Education and to the Cabinet by officials of the Association in November, 1965, and was the subject of an article in the *ATA Magazine* of that month. What follows is taken from the article mentioned.[1]

> The research lag is well-known to workers in education. It is variously estimated, but a common statement is that 50 years is required for a research finding to be implemented in changed practice in the schools. Researchers have exhorted and castigated teachers and administrators, have warned and wailed, but all to no avail. The research lag continues.
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> On the other hand, teachers and administrators have criticized the research done in universities because it frequently appears to be unrelated to the real problems in education. A name has been coined for research thought to be of this kind, "Mandarin-type," so-called because it has no apparent use or application. However, such research is

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[1] S. C. T. Clarke, "Educational Research and Development," *ATA Magazine*, XLVI (November, 1965), 18-20.

stoutly defended on the grounds that it increases knowledge and that no one can be certain that it will never have use or application.

There are many kinds of research. One of these is experimental. Hilgard, in the 1964 yearbook of the National Society for the Study of Education, undertook a new and broader definition of research. He stated that it involved six steps: pure science research not directly relevant to any given inquiry, research relevant to a given inquiry, research still more relevant because the subjects studied are the ones to which the inquiry is being applied, experimental try-out in laboratories or special classes, field try-outs in regular or ordinary classrooms, and advocacy or adoption. He further stated that the first three steps could be described as pure research and that the last three were technological research and development.

This broader definition of research enables us to see more clearly that the kind of research which constitutes the research lag and which forms the basis of the charges and counter-charges between researchers and teachers, is the first two of Hilgard's steps. The other steps tend to be neglected. It is proposed that a special institute for educational research and development be established to stress the neglected steps.

Another kind of research is of great value to decision-makers. This is the survey. Many have argued that information-gathering, information analysis, projection of trends, and the like are very low-level activities and are not research. Be that as it may, surveys are vital to decision-making. How many Grade I students will enrol two years from now? How many girls plan to take nursing? How well do students in Stanine 5 perform in the high school matriculation program? What are the reasons teachers give for leaving the profession?

Surveys of such matters assist in planning ahead to provide the required classrooms and personnel, to modify conditions, and the like. Such surveys are basic to decision-making, and would be done by the proposed institute.

Another aspect of research consistent with Hilgard's broad definition is the flow from experimental try-out, to field try-out, and then to dissemination. This sequence is particularly important in curriculum. The explosion of knowledge has initiated the need for a completely revised scale of curriculum development. We need teams including subject specialists, persons from allied disciplines such as psychology and sociology, teachers and administrators to propose courses and to suggest content and materials. The materials must be developed. Then there should be experimental try-out in one or two classrooms or schools."

Alberta Teachers' Association's Forecasts for 1975

The following forecasts for 1975 also originated with the Alberta Teachers' Association, and were printed in the *ATA Magazine,* November, 1965, 21-26:

Society is changing rapidly. Technological changes and automation profoundly affect production, the world of work and manpower needs. Knowledge is expanding at an increasing rate.

The growth in education in terms of numbers of persons and in dollar expenditure is also very rapid. For example, in the decade 1954 to 1964, the number of teachers in elementary and secondary schools in Alberta doubled and operating expenditures increased from $50 million to $150 million. Projections indicate that such increases will continue.

With increased growth there have developed duplicate institutions: universities, junior colleges, institutes of technology, vocational high schools.

There is need for an institute whose prime purposes are to study the trends in society, to forecast corresponding needs in education, to propose coordinated development, to prepare and disseminate information and proposals, and to provide advice to the Minister of Education and the Cabinet on decisions about education.

Proposals for an Educational Research and Development Institute of Alberta made by the Alberta Teachers' Association

Terms of reference

1. To study, plan and propose coordinated development in education to the Minister of Education and to the Cabinet.
2. To publish, publicize and disseminate studies, plans and proposals.
3. To make studies and field try-outs.

Levels of operation

Public elementary and secondary, technical (trade, vocational, technician), junior college, university, and adult or continuing education.

Budget

One percent of municipal-provincial expenditure on education (currently about $210 million).

Location

On the campus of the University of Alberta, Edmonton, in an addition to, or adjacent to the Research Council of Alberta.

Relationship to universities

Similar to that of the Research Council of Alberta, established by act of the Legislature.

Liaison

An advisory committee chaired by the Minister of Education (deputy chairman, the Deputy Minister made up of the chairman of the advisory committee of each department of the institute and the director of each department.

Organization

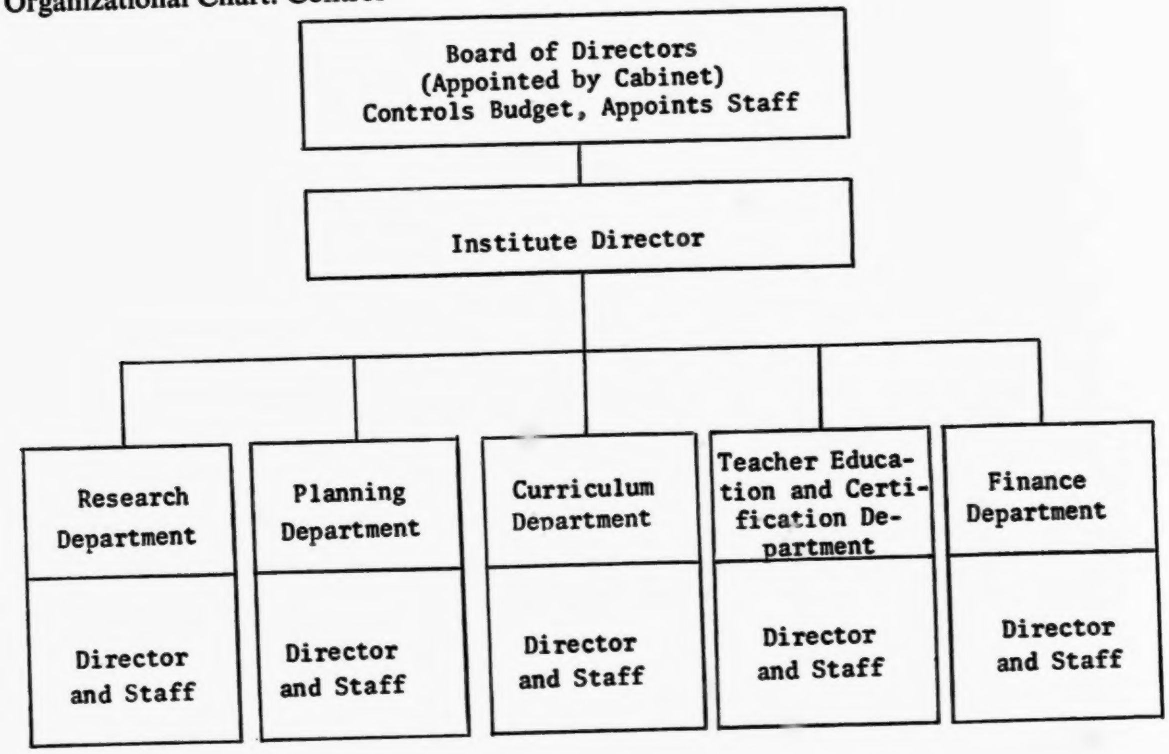
Advisory to the Minister and the Cabinet, and operating through appointed committees which meet at least three times a year and oftener as required and through a permanent director and staff in each department. (See page 153.)

Suggested Initial Tasks

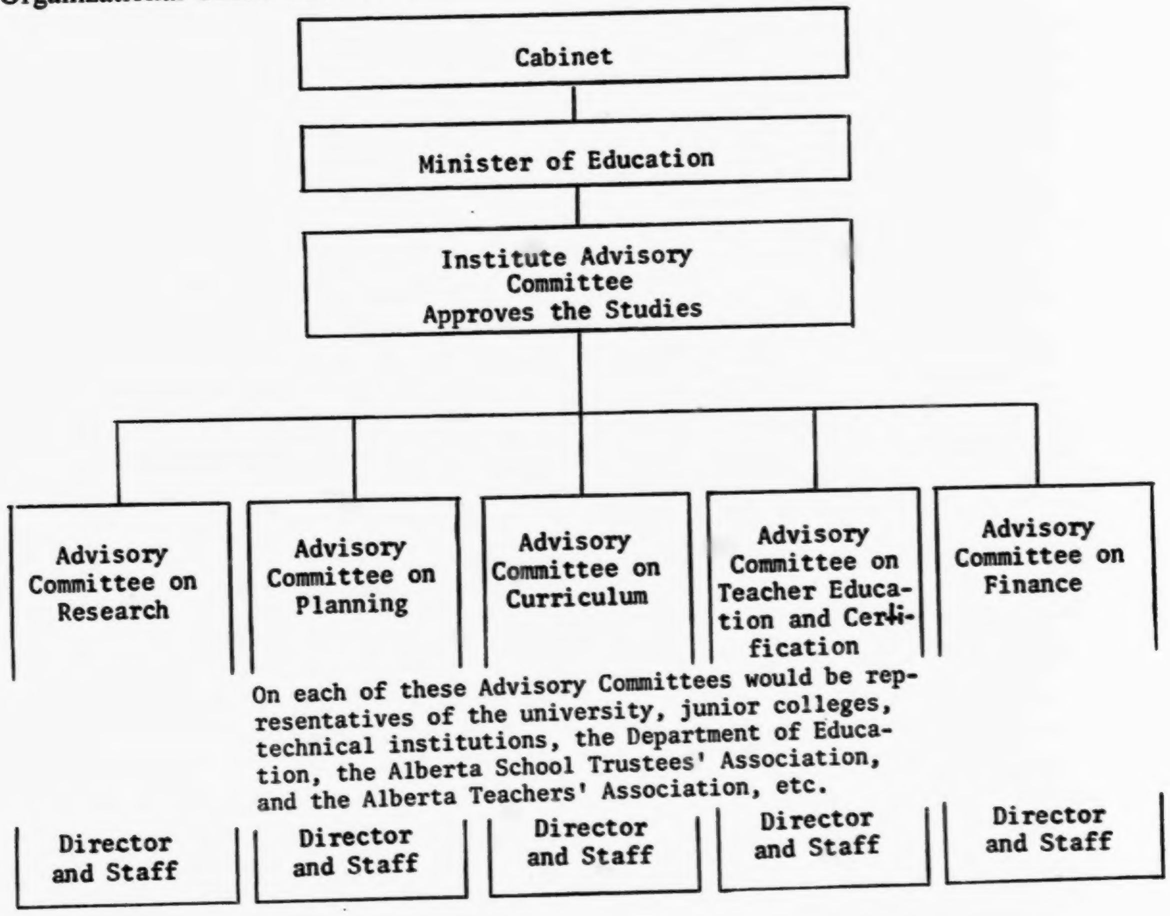
A. Research Department — To do research as determined by the institute advisory committee, for example:

1. To study matriculation in relation to university success.
2. To devise alternate examinations for migrant students.
3. To prepare and distribute expectancy tables based on Grade IX and Grade XII results for university courses, junior college courses, and technical institute courses.
4. To study the vocational aspirations and plans of Alberta youth.
5. To forecast enrolments in universities, junior colleges, technical institutes, and the schools.
6. To study the holding power of the schools, technical institutes, junior colleges, and universities.

Organizational Chart: Control


Board of Directors
(Appointed by Cabinet)
Controls Budget, Appoints Staff
Institute Director
Research Department
Director and Staff
Planning Department
Director and Staff
Curriculum Department
Director and Staff
Teacher Education and Certification Department
Director and Staff
Finance Department
Director and Staff

Organizational Chart: Function


Cabinet
Minister of Education
Institute Advisory Committee
Approves the Studies
Advisory Committee on Research
Advisory Committee on Planning
Advisory Committee on Curriculum
Advisory Committee on Teacher Education and Certification
Advisory Committee on Finance
Director and Staff
Director and Staff
Director and Staff
Director and Staff
Director and Staff

On each of these Advisory Committees would be representatives of the university, junior colleges, technical institutions, the Department of Education, the Alberta School Trustees' Association, and the Alberta Teachers' Association, etc.

B. Planning Department — To devise plans and propose coordinated developments as determined by the institute advisory committee, for example:

1. To study trends in society, e.g., automation, the explosion of knowledge, and to forecast needed education provisions.
2. To estimate the social consequences of different proportions of an age group securing matriculation.
3. To advise on geographic location of education institutions, particularly vocational schools, technical institutes, junior colleges, and universities.
4. To study the desirability of duplication of facilities, and of only one facility, by courses or areas of study, in vocational schools, technical institutes, junior colleges, and universities.
5. To study adult and continuing education to determine optimal institutional responsibility, state support, and needed future developments.

C. Curriculum Department — To develop curriculum in terms of syllabi, textbooks, materials, and instructional aids, as determined by the institute advisory committee, and to carry out field studies and field try-outs, for example:

1. To appoint and pay committees of subject experts, foundation-field experts (psychology, sociology, etc.), teachers, and administrators to develop syllabi and textbook-type material.
2. To devise programs for programmed instruction of certain parts of courses and to do field studies and field try-outs.
3. To propose new courses or parts of courses for the schools, technical institutes, junior colleges, and universities.
4. To promote field try-outs of technologies such as the initial teaching alphabet, educational television, team teaching, and to evaluate results.

D. Teacher Education and Certification — To study all aspects of teacher education and certification including recruitment, admission, selection, institutional preparation, certification, placement, internship and continuing professional education for teachers of all levels, as determined by the institute advisory committee, for example:

1. To study present sources of teachers and means whereby the supply can be brought in line with requirements in terms of recruitment, bursaries and retention, for all levels.
2. To study certification requirements.
3. To propose field try-outs of practice teaching and internship experiences.
4. To propose developed and coordinated programs of continuing professional education and to suggest institutional responsibility.

E. Finance — To study and forecast the expected capital and operating expenditures, to study sources of revenue, the impact of these on different strata and elements of society, and to publicize the results as determined by the institute advisory committee, for example:

1. To study the impact of federal aid and to make proposals about amounts and method of distribution.
2. To determine the most equitable means for financing education.
3. To devise formulas for the distribution of provincial support for operating expenditures and for capital expenditures.

A proposed act for an educational studies and development council, modelled after the OISE Act, was also presented.

The AACER Proposal for an Alberta Educational Studies and Development Council

The Alberta Advisory Committee on Educational Research (AACER) was started in 1955, largely because of the efforts of Dr. G. M. Dunlop. It has, since that date, published the *Alberta Journal of Educational Research.* The Committee is representative of the Faculties of Education, the Department of Education, the Alberta Federation of Home and Schools, the Alberta School Trustees' Association, and the Alberta Teachers' Association. At a regular meeting in April, 1965, the matter of support for research and the need for application of research findings was discussed, and the Committee decided to hold a special meeting devoted to this topic. Dean Coutts, Dr. Jenkinson, and Dr. Hunka of the Faculty of Education, University of Alberta, Dr. Byrne of the Department of Education, Dr. Kratzmann of the Trustees' Association, and Dr. Clarke of the Teachers' Association met to develop plans; they then met the Minister and Deputy Minister of Education, then met again to prepare a proposal. The special meeting of AACER was held in September, 1965, and the proposal it authorized was presented to a committee of the Cabinet in November. More detail was requested, and early in January, 1966, a revised submission was presented by Dean Coutts, Dr. Hunka, and Dr. Byrne.

The first submission outlines the AACER proposal as follows:

> The need for an organization, well staffed with competent professional and supporting technical personnel, to make studies of educational problems has been recognized as a desirable goal by a number of agencies within this province for at least twelve years. Support for this position is found in the Report of the Royal Commission on Education, submitted to the Alberta government on November 9, 1959. That report made direct reference to the establishment of a permanent educational research organization. It also pointed out that "a substantial number of briefs . . . strongly urged the importance of providing adequate resources for educational research."
>
> The Alberta Advisory Committee on Educational Research, composed of representatives from the Department of Education, the Alberta School Trustees' Association, the Alberta Teachers' Association, the Alberta Federation of Home and School Associations, and the Universities of Alberta (Edmonton and Calgary), has continued to give support to the concept of an education studies and development council. Organizations holding representation on the AACER have declared their position in support of this concept. Specifically, the Alberta Federation of Home and School Associations, the Alberta School Trustees' Association, and the Alberta Teachers' Association have given documented support. It is the opinion of the members of the AACER that the proposal now being made, if acted upon, could lead to the implementation of many important recommendations made by the Alberta Royal Commission (1959) as well as to the solution of educational problems which have since been identified.
>
> The education and development council as presently conceived would not interfere with the administrative and regulatory functions or responsibilities of the Department of Education. Rather, the organization as described herein would be complementary to this Department by cooperatively identifying problems as they arise and sharing in their solution.
>
> In industry, the importance of making studies related to the development of new resources, improving upon old technologies, and continuously evaluating the quality of

its products is self-evident. The Alberta Research Council has served this Province well in this way. Studies involving human resources have resulted in important advances in medical technology and practice. The University of Alberta has made substantial contributions toward these advances.

The AACER recognizes that large amounts of public funds are being spent for education. It further realizes that these amounts will, through the need to educate an expanding population, continue to increase. The members of the AACER, familiar as they are with studies conducted in other parts of the world, realize that the efficiency of an educational system may be improved if practices are thoroughly investigated on a pilot basis as a preliminary to wide-scale implementation.

The members of the AACER are convinced that studies of educational problems must have support from public resources. Since legislation places the responsibility for public education upon the public treasury, it would appear reasonable that a portion of these resources be used to improve the effectiveness of the educational product. It is for this reason, and in consideration of the importance of public education to the development of human and physical resources, that the AACER presents a proposal for the creation of a council for educational studies and development.

The Cabinet committee which received the AACER delegation requested more detail, so a January, 1966, presentation outlined procedural steps which the government might take. Legislation would be required; a board of governors should be appointed; the board should appoint a director who, assisted by a committee of specialists, would plan accommodation and equipment, staff needs, and initial program. During the first year the director would visit research and development centres in other places, and would develop liaison with other systems.

The AACER proposal only suggested "departments" in terms of specialists who might be employed for each area: research design, developmental programs, curriculum, vocational education, school design, school finance, and adult and continuing education. The proposal, developed in some detail, suggested initial projects. These included manpower studies, curriculum for various vocations, counselling and placement in vocational education, staff utilization in vocational education, and programs for the effective use of leisure. Buildings and equipment — in terms of function, materials, costs, maintenance, and flexibility — were outlined as an area for projects. Other projects suggested were in the area of staff utilization and included: optimum size of student groups; the optimum distribution of professional staff as between teachers, administrators, supervisors, and specialists; use of staff in terms of teaching techniques; and the effect of technological aids on learning.

The cost for the first year of operation was estimated at $200,000 rising to an estimated 1 per cent of operating expenditures on elementary, secondary, junior college, technical institute, and university education.

Government Reaction

The Minister of Education announced early in February that the government was not prepared to establish an institute or council during the 1966 session. Considerable pressure from newspapers, from individual educators, and from educational organizations was directed toward government acceptance of the proposals. In March the Premier stated that the government would try to develop guidelines for a program of research not only in education but also in human relations and resources. He expressed a concern that there be assurance of practical and beneficial results from the large expenditures proposed.

Comparisons

A basic difference between the situation in Ontario and that in Alberta is that OISE is in operation — very vital, very active, very energetic — while the Alberta institute or council is, so far, only a proposal. A second basic difference is in the groupings within the two. In OISE, graduate study, basic research, and what Hilgard calls "technological research and development" are married but appear to be divorced from teacher education; whereas in Alberta, teacher education, graduate study, and basic research are married but by the proposal would be similarly divorced from technological research and development. In each case, "married" means legally and institutionally bound together, and "divorced" means the opposite. One could speculate as to the probable consequences. A third possible difference is in the scope of concern. Alberta proposals specifically mention post-secondary education in terms of junior colleges, technical institutes, and universities. The terms of reference of OISE are broad enough to encompass studies in these areas, but there is no specific mention of them.

It would be wearisome to enumerate the similarities. As was stated at the beginning, educators in Alberta accept the OISE concept. "Imitation is the sincerest form of flattery."

The National Needs

K. V. PANKHURST
Department of Citizenship and Immigration, Ottawa

It is a pleasure to be asked to take part in this Conference on Emerging Strategies and Structures for Educational Change, and to have the opportunity of welcoming the carefully worked-out research program of The Ontario Institute for Studies in Education.

You may remember that when Stephen Leacock wrote about the character of university education and compared the Universities of Toronto and Oxford, he observed that if he were founding a university he would found first a smoking room where students could talk. Then when he had a little more money in hand he would found a dormitory, so that they could come into residence; ". . . then after that, or more probably with it, a decent reading room and a library. After that, if

I still had money over that I couldn't use, I would hire a professor and get some text books." Stephen Leacock, then, would have approved of your approaching the subject of educational planning by discussing organization and strategy.

Economists before and after Stephen Leacock have been very interested in education; but primarily in their capacity as teachers. The interest in education as a subject of economic importance has emerged only in recent years. To take an interest in education in relation to the economic life of the country requires taking a long view which was quite out of the question in the days of laissez-faire, laissez-passer. When, however, a more positive approach to economic policies was made possible by the work of Keynes, interest naturally enough focussed upon the problem of steering a middle course between heavy unemployment and rapid inflation. But since the war, as the more advanced economies have learned to do that with a greater measure of success and have found it relatively easier to achieve this delicate balance in times of growth, the Keynesian approach, which is largely concerned with the regulation of the economy considered as a whole, has been found to be inadequate — it does not go far enough. Keynesian ideas have been some of the most powerful ideas in the history of the modern world, and will continue to shape our thinking about the whole economy; but they now need to be supplemented by a more detailed approach capable of taking greater account of the lives and capacities of individual members of the community.

One new approach to this problem is being developed through the growing interest in manpower. Briefly, it might be said that the objectives of manpower policies, and of the new Department of Manpower in Ottawa, are to help to bring about a better distribution and use of human resources in order to achieve high and rising standards of activity and of income which are consistent with the freedom of choice and welfare of individual members of the community.

Toward these objectives the Department of Manpower is developing a new organizational structure which contains, among other things, two elements that are directly relevant to the matter you are discussing in this conference. The first is the new Canada Manpower Service which it is intended will provide a consultative placement service to all members of the community — the unemployed, those outside the labour force (young people, housewives, and others) and those already in employment — in order to help people to find jobs which are best suited to their talents, actual or potential, their experience, their own objectives, interests, and inclinations. The interest in manpower development has been growing in Canada in recent years under the aegis of the Department of Labour. In the Department of Manpower the approach has now been equipped with a powerful operational arm. In addition, as you know, there are also a number of complementary programs in existence already to encourage training and a greater degree of movement between places and jobs.

The second element in the approach to developing what we call an active manpower policy is to try to obtain a much better knowledge of the opportunities for using the talents that people possess, and to improve our understanding of how those talents can be developed and mobilised in our economic and social life. It is to those kinds of ends that our research programs are being developed.

In the short term, it is important to have better information about the opportunities currently available for employment. At the moment we know only about the opportunities which employers notify the Manpower Service about or advertise. An experimental survey of some 17,000 establishments is shortly going to be taken here in Ontario in order to assess to what extent information about current opportunities can be developed. The current pattern of employment cannot however be expected to reflect a perfect matching of the capacities of the labour force with the requirements of employers. In our kind of economy the dispersion of human resources does not, of its own accord, conform to what employers require for many reasons such as lack of information, inertia, and so forth. We do not, however, know to what extent there is, even in a limited economic sense, a lack of balance between what people are equipped to do and what they are actually doing. Some initial indications of the dimensions of this problem in practice will, it is hoped, emerge from a detailed survey of a large segment of Canada's high-level manpower which is to be taken later this year. It will permit us to compare the education, training, and experience of several groups of scientific and professional people in Canada with the current pattern of employment. Highly trained people are scarce in relation to the general need for them, and in relation to the capacity of employers to use them. This scarcity will become relatively much greater if the advance of scientific knowledge and its embodiment in new technology increases faster than the number of people equipped to manage and control it. In this kind of situation it becomes important that the training and education embodied in our most highly trained people should not be wasted, but fully utilised. Proper utilisation is at least equivalent to — if not better than — an increase in the number of highly trained people. In the very short run it is one of the most practicable solutions to the scarcity of this kind of manpower.

Taking a slightly longer-term view of the relationship between education and manpower leads us to examine some of the changes that are required in the educational system to meet the changing requirements of the economy. As economies grow (and this becomes important if, like the Canadian economy, they are growing relatively fast), the pattern of industrial employment has to alter to reflect changes in demands by consumers, business, and government. That, coupled with changes in methods of production and technology, and with such things as changes in the extent to which work becomes more or less specialised, affects the pattern of occupational requirements and the content of the experience within occupations. Since these shifts in the pattern of vocational requirements are capable of altering the relative requirements for people trained to different levels, it appears to become important to be able to estimate what effects economic growth will have upon the pattern of occupations, and so to help establish some idea of the extent to which educational facilities should be provided at various levels, including particularly the amount of technical and vocational training.

There has been some discussion during this conference of the continuum which exists from research to education policy. It may perhaps be useful to recognize an earlier stage in that continuum of decision-making. The process originates in recognising and making explicit the objectives of education and the problems that will surround it. During the last year or two the O.E.C.D. has made a substantial contribution to educational planning by identifying in some detail the objectives of educational policy in relation to manpower problems. It would be a valuable contribution to have an analysis of the objectives of education in Canada in order to establish specifically what kind of educational change is required in this country.

At this point it may be worth comparing the objectives of manpower policies which I mentioned earlier with those of education. I suggest that education has four objectives. The first is to help people to learn to think for themselves. The second is to provide instruction in or for a vocation. The third is to equip people to live as members of a community. The fourth is to equip them to achieve their own individual satisfaction. Manpower policies have to be concerned with the extent to which the needs for vocational training at all levels are supplied, but they are equally concerned with the other objectives and with developing the full potential of the individual. Living in a world of work, which occupies often the larger part of our waking hours, requires much more than vocational training alone. For our human resources to be fully effective people require a capacity for making decisions, interpreting situations, and adapting themselves, which makes the first objective of education vital. The third, the capacity to live in a social environment, is becoming increasingly important to economic efficiency because intelligent and constructive collaboration is often a necessary condition of increasing specialization. The satisfaction of the individual is an end in itself, an objective of manpower policy, and also a condition of an effective manpower policy. On the other hand, because it is highly specific, vocational training, in addition to its primary function, can be one of the more efficient instruments of mind-training.

Since there is an identity of interest between education and manpower policies and not, as is sometimes suggested, a conflict, it becomes important for manpower policy as well as for education to achieve the basic purposes of education as efficiently as possible. Nevertheless, anyone who has stood in the classroom knows well how difficult it is, because of the gap between teaching and learning, to achieve those objectives. If I may return to Stephen Leacock, you may recall that his suggestions about the organization of a university, which concealed the truth in a jest, were the product of his concern to preserve the basic purposes of learning which were "long since buried in more up-to-date places under successive strata of compulsory education, state teaching, the democratization of knowledge, and the substitution of the shadow for the substance and the casket for the gem." Yet, while the process of making a mind is an elusive one, the increasing social demand for education requires that we attempt to extend it to an increasingly larger proportion of the community. For these reasons research into the process of learning and the capacity of people to absorb education becomes more important than ever. There are many problems that have to be investigated by us and by other institutions in the field of education. One important issue is to determine how much people can assimilate in education and training at each level and what practical constraints there are — social, economic and psychological — upon learning. We need to know how people acquire their skills. One project which we are currently developing in a purely exploratory way is to try to assess how much of the skills used in particular occupations comes from formal training and education, and how much is acquired from informal training and learning through work.

The general objectives of education and the pursuit of them have, however, to be seen in the context of the future growth of the community and of the economy because that determines the scale upon which educational facilities will be required and also our capacity to provide them. The magnitude of the problem is indicated by the fact that, during the next quarter of a century, the population of Canada is likely roughly to double while production per person (which indicates the resources that we can develop for a variety of purposes including more investment in education) can be expected to show a great increase. At the same time the demand for education will continue to increase as the social demand for education extends and also as people come to appreciate the economic value to themselves of investing in education.

Social changes, however, tend to take place slowly. For example, although participation in university education is increasing and is expected to continue increasing rapidly among the younger age groups, it will be a long time before it significantly affects a large part of the population. In spite of the current very high rates of investment in university education, by 1970 only about 6 per cent of the men and 3 per cent of the women in the population of Canada will possess a university degree. This indicates the scale of the problem to be faced in increasing the university-trained part of the labour force. It also indicates another important dimension of the problem of more education. Since investment in higher education is relatively greater for young people, there is going to be a relative scarcity of older people trained to a high level, and it becomes a particularly difficult problem to assess how much more education and training, and of what kind, can be given to older people already in the labour force, and by what means it can be accomplished. The need to extend educational facilities by a very large amount must be expected to coincide with greater opportunities for highly trained people in other professions than teaching, and in this situation it is possible that teachers may become relatively more scarce in relation to the growing need for educational facilities.

The increasing competition for highly trained people, together with the need to attain the basic purposes of education, indicates the need to increase productivity in education. There are two approaches to higher productivity in education. One is to enable the teacher to spend more time in teaching by providing supporting staff for administrative duties outside the classroom. The expansion of the scale upon which educational facilities will have to be provided during the next quarter of a century will permit — and could force — a greater degree of functional specialization within the educational system. The other approach that you have been discussing, the improvement of teaching techniques, is potentially very important if it permits the function of instruction to be performed more quickly, leaving more time for learning in depth.

The United States Experience

SAM SIEBER
Bureau of Applied Social Research, Columbia University

I am worried about OISE because it seems to be trying to do all things for all men. If OISE is unique in the western hemisphere, it is because the other institutions that attempted this universality are dead. I am talking about the schools of education in the United States, and I am not joking. Originally, the schools of education in the U.S. in the 1920's were set up with the idea of developing a science of education and of promulgating this by training practitioners. The shibboleth, science of education, was very prominent; Thorndike wrote a book called *The Science of Education*. Everybody was using this term: they were going to do research and development. They failed dismally. After about ten or twenty years they gave up trying; in that time they had already failed.

I would like to organize my comments into three areas. First, why did these schools fail? I think OISE can learn some lessons from their mistakes. If you cannot, you may suffer the very same consequences. Second, I want to try to convince you that this failure in the United States and in educational scholarship was caused by pressures and problems still very much in existence, and therefore deliberate attempts must be made to overcome these problems. Third, I want to make some very concrete recommendations about the organization of OISE.

History of Educational Research in the U.S.

I see six major problems which confronted researchers: first, they became cut off from the liberal arts and sciences. The great men of educational research in the U.S., men like Buswell and Thorndike, were not trained in education; they were trained in academic departments. They then trained students who remained in education; those in turn trained more students, and so the process continued. These people who stayed in the schools of education were gradually cut off from the academic departments. The consequence was, as has been said many times, an absence of theoretical base in the research they did in education, and also a methodological primitiveness in some areas. The latter shortcoming is not often mentioned or appreciated. For example, the term "survey" is used in a way no sociologist would ever countenance. We don't do descriptive surveys any more, but analytical surveys. Educational researchers have no idea of what a modern social survey is. They have little idea of what field research is, despite the hundreds of opportunities for doing field research in educational settings. In short, the drawbacks of dissociation from the liberal arts and sciences show up in the methodology of research as well as in the area of theory.

Educational researchers were pressed by school systems to provide services. One result was that manpower for scholarship was depleted. This pressure for services has undermined the very concept of behavioural science in the universities and in schools of education. For example, last year we gave a list of activities that might be defined as educational research to all the research bureau directors in the U.S. — such activities as dissemination, design of curriculum, school status study, and field service. We said, "Just check the ones which you call educational research." Then we classified these directors according to whether they provided these particular services. We found that if these research directors provided these services, they tended to call them research. They are not even sure any more what research in education is.

Schools of education were overwhelmed with the demand for more teachers, with the need for getting them out of the schools as soon as possible. This meant that research has been done very much on a part-time basis. Professors of education have been overloaded with teaching responsibilities, so their research has been fragmentary. It takes a lot of time and money to carry out effectively a full-scale research project which studies all the relevant aspects of an educational setting. You cannot operate at top efficiency when you are doing the Saturday-night-and-Sunday-morning type of research. Consider all the papers on educational research that are published in which the authors take two variables and relate them to one another. They should have fifty or sixty variables, and they should be relating them to each other in settings all over the country. This is the only way to get at educational problems, but teaching and related services leave no time to do this.

Schools of education have attracted the less able students. This has been demonstrated by all kinds of measures of ability and qualifications of students entering different departments of schools and universities. Those who enter graduate schools of education are frequently people who have already decided on their careers: they have been working in school systems for a long time, and they have families they must support. These people are not going to be full-time students when they come back to study after several years of teaching. And they have a different mental set after teaching in a classroom; they are people-oriented rather than idea-oriented.

Schools of education have concentrated on psychology, particularly test and measurement psychology, and have neglected the social sciences. This is a very serious problem. It means that there are hundreds of unresearched areas in education which economists, anthropologists, sociologists, and so forth should be exploring. These scientists are not exploring them, however, despite our exhortations about collaboration and interdisciplinary work. In 1964 we did a survey of the authors of all research papers related to education which were published in some forty journals. We asked them about their specialties and what departments they were in when they did their research. Only 4 per cent were social scientists; the rest were professors of education and psychologists. Social scientists, nevertheless, have a great deal to say about human behaviour.

Professional education has failed to establish substructures to allow research to be carried out, protected from such professional demands as teaching and service. Researchers have not been taken out of the professional environment where all these pressures exist. They are unable to conduct the large-scale studies which today require many specialists in computer operations, sampling experts, design experts, questionnaire experts, and so forth. Their studies have remained fragmentary, partly because they have not had bureaus of research which have been really viable operations. Students have not been trained as apprentices on projects, simply because there have been no projects going on. Collaborative research has been sparse. I am blaming all these failures on the lack of the substructures which we call bureaus of research. These bureaus today have a great deal to offer. Our research shows clearly that in bureaus there is more collaboration, more interdisciplinary research, more large-scale research, and more opportunities for apprenticeship. OISE, of course, is trying to take advantage of the idea that you must organize a separate structure to carry out research.

Current Problems in Educational Research

My second set of comments has to do with the fact that the forces which have hindered educational research are still prevalent and that deliberate efforts must be made to overcome them.

The first problem is the separation of liberal arts and sciences. Education still has extremely low prestige in the universities. It is considered the "kiss of death" by many academics to get mixed up in education or to be identified as an educator. Besides, academic people have their own research problems. We in the social sciences have plenty of things to research: ideas and theories we can test out in industrial settings, in hospitals, and in the current war on poverty in the United States. Why should we get into education? This is still a very big problem.

The demand for services will always be a problem, especially in a society which stresses education as a panacea. This means that whenever you have a social maladjustment of any kind — segregation, manpower deficiencies, and the like — people blame education. The educational institution is a very large and complicated one, and it cannot be changed overnight; it always lags behind. This is a chronic social problem. Schools continuously demand services. To the scholar in the university, service work is much more immediately rewarding than research work. It is much easier, for example, to impress a client than it is to impress a colleague. You come to a client as an expert and he listens to you, and you do not have to wait for recognition from colleagues for your research. On the other hand, it takes you two years to do your research. It takes another year or two before anybody starts reading it and talking about it, and maybe another two before professors begin assigning it to students. When the research is finally discovered, it may turn out to be no good and you may have wasted your professional career. Basic scholarship is a very risky business, but in service work you get a "payoff" daily. Also, you can gain political support for your organization by doing services. As a matter of fact, many bureaus of research made deals with the state legislatures in the United States whereby they said, "We'll do services if you will let us do some research on the side." After a few years, they were doing nothing but services. The Bureau of Educational Research and Service at Ohio State University is a good example of this. It went down the primrose path of service partly because the state legislature required it. Of course, there is another reason why service is more attractive to scholars: it is more remunerative. The consultation fees, income from textbook publication, and the honoraria for professional work are very attractive. In sum, the pressures for providing service rather than doing basic research remain powerful ones.

The demand for more teachers is still very much with us. The shortage will be aggravated by an expanding population, especially since people are getting married younger and having children younger.

The inability to attract the more able students is still a nagging issue for several reasons. One is the continuing low prestige of education. Another is the fact that education serves as a channel of upward mobility for people who come from the lower-middle class, who want to become professionals, and who want to reach that goal fast. So you get a type of student who frequently is not the best material for training as a scholar. Also, as I mentioned before, many people in graduate schools of education have come there after teaching in school systems and after developing their own ideas about the practice of education. Having already set their career goals, they want to go back and teach again. They may have in fact used up their most intellectually productive years.

The problem of concentration on psychology continues and is related to the low prestige of education. It is very difficult to get social scientists from the academic departments interested in education. In fact, school practitioners, because they too have been through the same educational mill, think of educational research as teaching and learning or psychological research. Also, perhaps these teachers feel threatened by social research.

Finally, there is the failure to create substructures for scholarship within the universities to provide a protective environment against professional demands. This is still a great problem, although it can be overcome; attempts are being made to do this, of course, by federal funds. We still have to wait to see what happens. Let me remind you that there are now about seventy bureaus of educational research in the United States (the first one was created in 1914), but they have had an extremely high mortality rate. The average mortality rate has been about 3 per cent a year; they've died off; they just haven't succeeded. One reason, as I have said, has been the demand for service. Because they've had to take on service obligations, service has pushed out research. This has happened over and over again. Another reason is the present difficulty of getting faculty members to join bureaus of research or research organizations; they fear that they will lose independence or be dominated by a director. Some research we've done indicates that this is not so. They are no more dominated by the research director of the bureau than they are by a research coordinator who is responsible for, say, one hundred faculty members.

So, because of the demonstrable failure of educational research in the United States (and I will admit I really haven't demonstrated it here) and also because of these continuing pressures and barriers, deliberate efforts must be made, and these problems must be honestly recognized. Here are a few recommendations for OISE. If I say irrelevant things, then just check them off as such. Some of the things I say may be very relevant but politically unfeasible. You know best.

There should be separate divisions for research and for service, as home bases for different staff people. Each division should not try to do both, but there should be teams — action research teams, if you will — drawn from the different divisions for specific projects. This way staff members would come together, work on a project for however long it takes, and then disperse again to their separate home-base divisions. As for routine services like enrolment projections, drawing district boundaries, and making financial and plant surveys of school systems, I don't think these should be done by an institution of higher learning at all. They should be done by state, provincial, or federal government agencies. To my mind, it is not the obligation of an institution of higher learning to give routine help to schools, any more than it is the responsibility of a medical school to take care of patients, unless the care is done for purposes of research or for training. It's no more reasonable than to ask law schools to give legal aid to any client who asks for it, or business schools to help local corporations sell breakfast cereals, or departments of sociology to conduct the government census. These are jobs that can be done better, or at least as well, by state, provincial, or federal agencies. They are not the responsibility of the institutions of higher learning. These institutions should continually try to improve the tools of the social bookkeeping operation; but these tools should then be turned over to the appropriate authorities.

Another means of protecting the organization from undue outside demands, undue dictation of its research and service program, is to set a quota for studies initiated by the institution (with the consent of division heads, of course) and a quota for studies initiated from outside. If, then, somebody from the outside (maybe the Minister of Education) comes in and says, "Do this study for me," you will have to say, "No, we've met our quota. Forty per cent of the studies this year were outside-initiated, and the rest we have to do now ourselves. Come back next year." You see what I mean by "politically unfeasible!"

Very special efforts should be made to recruit social scientists. You should use the employment bulletin of the social science associations in the United States. You should write letters to the departmental chairmen of sociology, anthropology, and so forth. You should offer joint appointments to social scientists in the University of Toronto without requiring them to become staff members of OISE. Let them keep their identity in their home departments. You should bring visiting scholars for a week or for a year without expecting them to become staff members. Maybe they would stay.

This next point has to do with the training of "change agents" (also termed developers or research utilization officers) for our school systems, and with the training of researchers themselves. I am talking now about training recommendations. Let me make clear what I mean by research utilization. It seems to me that a school system, if you want it to become a self-generating, self-improving organization, must have someone in the system itself who will constantly bring in research information, developmental activities, or whatever, and who will serve as a channel between the outside world and the school system.

There are five kinds of training that I think OISE should provide for researchers, and which any organization must provide for its researchers: first, there are the fundamentals, the "grammar" of research. We should get this in the classroom: how to sample, how to design, how to interview, statistical procedures, and so forth.

There is also what the French call *explication de texte*. You take an outstanding research report and deal with that alone for three or four weeks. That is the only way you can really learn what went into this research; and if the project director who did the research is present, better still.

The third arrangement for training is, of course, internship on projects. It might not be a bad idea to suggest giving credit for internship on projects, just as we give credit for taking courses. Project directors can even grade students who work with them as research assistants.

Another type of training arrangement is field work in educational settings as a substitute for professional experience which is often required for admission to graduate school. I want to underscore this point. There is no reason in the world why people who have been trained for scholarship should have to be teachers for two or three years. You can learn much more about a school system if you have the free run of that system for a month so that you can sit in on school board meetings, talk to superintendents, wander into classrooms, talk to teachers and students, and so forth. If you *must* teach for two years, you get blinders on from talking only to other teachers, and being kept outside the administrative and decision-making centers. In short, this field work arrangement is a substitute for the requirement of professional experience.

Let trainees do their own analyses of the results of projects that have been carried out; then let them criticize the papers that they write. In addition, there should be a training director for every dozen or so students, someone responsible for rotating students among the projects according to their needs.

Retain your doctoral recipients for at least two years of post-doctoral work. They cannot learn research techniques and then carry out effective research in four to five years; you have to keep them in the organization for a while. Make them project directors themselves, and then they can begin teaching new generations before they go out into the world.

My next general recommendation concerns the role of bureau directors. We have just learned in our research that there are several kinds of research directors. The role of a bureau director is extremely complicated. It is a rare man who can mind all these things: as an "executive" he must administer; as an "external leader" he must deal with the outside world; as an "intellectual" he must deal with the staff's research ideas, and so forth. My recommendation, therefore, is that perhaps you should have associate directors, people who specialize in certain roles. For example, there should be some one to deal with the outside world: with the ministers of education, with the school system, with the administrators in the University of Toronto. Someone else could be the intellectual leader of the organization, a kind of intellectual marriage broker, as I have called them, to tie the knot between the various divisions. Perhaps you should have another leader to be the manager, the administrative director of the organization. In other words, you may have to specialize in these roles, especially if the organization is large.

You should appoint a sociologist to study the organization for a year or so and report directly to an advisory board composed of scholars. Burkhart Holzner did this job at the Research and Development Center in Pittsburgh. He was not considered a threat, for field researchers have ways of overcoming the anxieties of people they study. His study proved very helpful to that particular R & D Center. And the same thing was done at the Oregon R & D Center by an anthropologist.

There should be clear-cut criteria for the allocation of funds among the various divisions. This should be agreed upon by the division heads in order to forestall competition for funds among these divisions; if you allow competition and conflict to develop, then you are going to undermine the development of action research teams and the collaboration between divisions. People can get very involved over how much money they have. And it is not just a matter of how much money you have, but also how much prestige you have in the organization. Money is often a symbol of prestige, and sometimes that is what people are really worried about.

One of your first large-scale projects should be a national assessment of educational achievement in Canada, to be conducted periodically, perhaps every three or four years. I think this will have the following results: it will arouse the public from its apathy about education and focus attention on common educational problems among the provinces. This attention may lead to greater national concern with education and eventually bring about a federal office of education. A second consequence of this kind of national assessment of achievement may be that if you measure improvement or deterioration in various subject areas, if you assess different social groups over the years, you will find out where your research money is most needed. A third function or contribution of such national assessment will be that you OISE people will generate a great deal of data for your own research purposes. You will not have to do fragmentary project after project. In other words, you will be able to identify conditions which contribute to educational achievement. If you have hundreds of school systems in your data bank, you can do this.

A final recommendation is that you should study the diffusion process. You should experiment with different kinds of models. Perhaps one model you should think about is that of giving support to a research utilization officer in school systems, and channelling your dealings with school practitioners through this officer. As I have said, this is perhaps one means of insuring that schools carry on with innovations once your action team has left.

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Where Do We Go From Here?

It has been my pleasure to be a guest at the first anniversary conference of OISE. I have particularly enjoyed working again on this Canada-wide basis with old friends from the days of the Canadian Education Association's Kellogg Project in Educational Leadership. The issues discussed at this conference seem to resemble many of those bandied about in the CEA project days, the focal point still being the role of leadership in bringing about change in classroom behaviour. But here these issues have been discussed at a much more sophisticated level. After all, we have had some experience, and I guess we should expect a good deal more sophistication to have developed since 1952.

When I return from a conference, someone inevitably asks, "Well, what did they say?" and of course most of us have some kind of answer. Well, what *was* said here? What *did* we say about strategies and structures for educational change? Throughout the various sessions of the last three days observers have occasionally jotted down what they thought were some of the main ideas — you see I'm no mean strategist myself — and the following interpretations are based partly on their observations and partly on my own.

It seems to me that we, as a group, set this conference in a context of eight propositions; I think they make a set.

Man now believes that he can play some part in directing evolutionary development toward improvement and progress. Planned social innovation must parallel scientific and technological change. Such planned innovation may be at the societal level, at the institutional level, or at the classroom level; this conference has looked mainly at change at the societal level, directed toward the more useful allocation of resources to a nation or a province. The school can be a major agency in transforming social patterns. Change, to be controlled, must be institutionalized. One can view change as a continuum; this conference recognizes three basic stages in the change continuum: research, development, and implementation. There has been a tremendous time-lag between the production of basic research and its implementation, so that controlled structures are needed to associate research and innovation more effectively; in education, the development stage is sadly deficient. There is a great need to base our educational innovations more firmly on research evidence; this expresses a faith in research-based change as progress, not regress.

The word "strategy" was used differently by different speakers. But, as I see them, the main strategies for change suggested by our first two speakers were these: use dollars to buy change; identify potential leaders and give them proper training; provide educators with rewards for creative ideas; establish clear communication lines across all gaps to make the potential change continuum into an actual one; facilitate the sharing of goals; hold joint consultations; agree upon the distribution of power and responsibility; use a multidisciplinary approach to social change; employ built-in, concurrent evaluation as an integral part of an educational program. Professor Taylor had a slightly different vocabulary. He suggested two main strategies, although he employed most of the above. These he called "salients," which define major areas of development, and "probes," which are explorations of possibilities through study groups and feasibility studies — a kind of pilot study.

A wide variety of organizational structures are being tested or proposed in the attempt to link basic research, development, and implementation more effectively. What they all have in common is a much more comprehensive character than any of the previous bureaus, departments, and so on. The United States, we recall, plans five types of institutions: centres for research and development based at various universities; regional educational laboratories with emphasis on dissemination; supplementary educational centres run by individual school systems; teachers in each school responsible for liaison with the supplementary centre; and a kind of information clearing and retrieval documentary deposit. The research and development centres are variously organized, but in general they aim at comprehensiveness within manageable limits; particular organizations are very much dependent on local conditions and personalities.

Now England has in operation the Schools Council for Curriculum and Examinations, with its interests implied in its name. Its formal organization is representative of major sources of power, from the Department of Education and Science to classroom teachers, but it attempts to build basically on teacher freedom and responsibility. It has a formal committee structure and a secretariat organized according to its foci of interest, such as the current problems of raising the school-leaving age, of examinations, and of the revision of the sixth form curriculum. It contracts probe studies to a variety of universities and other organizations.

OISE is now working out operational details of an organizational structure which brings together and expands considerably the activities of the former Departments of Educational Research and Graduate Studies of the Ontario College of Education, and the Ontario Curriculum Institute, linked with other public and voluntary agencies and, as much as possible, with individual practitioners. Dr. Clarke's comment was that Ontario's pattern combines graduate study, basic research, technological research and development, and dissemination, and is somewhat separated from teacher education. Alberta's plan, still in the proposal stage, marries graduate study, basic research, and teacher education, and separates these somewhat from technological research and development and dissemination.

Quebec provides a recent illustration of the use of a Royal Commission to facilitate change. Its reports have already resulted in the implementation of one of its major principles: encouragement of participation by the people in planning educational change will determine the rate at which progress can be made. This participation has been brought about by four main instruments: a Minister, with his executive arm of technocrats back home, touring the country in Ryerson fashion to discuss and explain; consultative committees; widely representative regional planning committees, making developmental plans for each region for revision and coordination by the Department of Education; and a widely representative Superior Council of Education with a Secretariat and a budget — a council which must report to the Minister annually on some things, may advise him on many things, and may conduct and contract for studies. The conference discussions have brought out the need for balance between public participation and decentralization on the one hand, and technocratic expertise and centralized planning on the other.

Some differences of opinion among us became evident right after Dr. Fleming's paper on "Rational Strategies." Dr. Loubser suggested that talk of strategies and structure is outside the classrom, is organization; the conference was concerned with systems, and so should keep to the systems point of view. But Professor Thomsen and a number of audience members felt that talk of educational change with classroom teachers and pupils as end points rather than starting points was meaningless. It was argued that teacher training is a primary means of making an educational system sensitive to innovation long after a particular innovation is dead; several audience members expressed the view that children, creative teachers, and local research people should be at the heart of any structure for educational change.

Dr. Holzner pointed out the difficulty of maintaining effective administration without curtailing the freedom of investigators. Dr. Fleming mentioned as another possible difficulty the conflict between team coordination in research and development, and the personal preferences of idiosyncratic research people. Other questions concerned the kind of criteria to be used in evaluating the work of junior staff, and the difficulty of evaluation in a centre like OISE, where staff would be working primarily in teams. Another difficulty concerns the gaps and the need for middlemen. We have heard much about the middleman; the danger is that, like the one who used to fall between two stools, the middleman now could fall flat right in the middle of a gap. Professor Taylor and Dr. Byrne pointed out a difficulty of another kind: apparently the success story of the Schools Council is possible only in England. A difficulty of still a different nature had occurred in Quebec.

These were some of the problems which emerged during the earlier addresses and commentaries. In the seminars which followed, we were able to clarify at least some of these difficulties and some others as well. There was some agreement on about a half-dozen points. Throughout the conference, delegates widely endorsed the concept of research centres and development centres of some kind, probably varying in type from large regional centres to small local units, depending on geographical and historical context. A variety of models for change should be tried until more knowledge of appropriate models is available. Delegates again stressed the importance of the human element in change, as well as that of organizational structures; they particularly emphasized selecting as staff creative thinkers with an ability to communicate their ideas and see them into action. The need for keeping research relevant to education, and close to teachers in training, teachers in the field, government planners, and other university faculties was underlined. It was reiterated that dollars can buy change, and we expressed some preference for federal dollars; the federal government particularly was to be encouraged to assign money to this end, with a minimum of jurisdiction over its expenditure.

As the conference progressed, I became aware of two contrasting ways of looking at educational change. Some of us, from what I shall call viewpoint one, regarded education as essentially an organization in which, more or less incidentally, some personnel are involved. Others, from viewpoint two, were looking at education as essentially something that people experience, which incidentally contains organizational and logistic support. It is obvious, of course, that my prejudice is for viewpoint two. I searched for some examples of how things might look from these two viewpoints. From viewpoint one, the teacher is a bureaucratic functionary; he is personnel. On the charts of the continuum for change, you recall, he appears near the end of the implementation stage, along with preparation of textbooks and teaching machines. From viewpoint two, the teacher is a creative leader. From this angle the starting point for considering educational change is teacher-pupil interaction, and more important, what changes are or are not taking place in the pupil himself.

Or let us look at teacher education. From viewpoint one, the teacher at the implementation stage is trained at the same time as other implementation material is being prepared. He might be brought back for refitting occasionally, when, like any other implement, he gets out of date. In the effort to keep change institutes of manageable size, it is not of primary importance whether teacher training should or should not be quite separated from research and development. From viewpoint two, education of the teacher as an inquiring, hypothesis-testing professional is of primary concern. He should receive his early professional education in university, in close association with professors engaged in research; he should be an integral part of the inquiring university community. He returns to this from time to time when and because he is curious.

Now, what about the balance between the specialist and the "generalist"? These are obviously relative terms, but I think there was a fairly clear-cut, one-sided suggestion running through almost every mention of them. From viewpoint one, highly specialized personnel are needed, and preparation programs should concentrate on producing them. A recent Canadian Council for Research in Education paper listed ten functions of workers in research and development, and stressed the need for very specialized preparation. Dr. Miller and Dr. Taylor have stressed the same point. The proponents of viewpoint two say that while we want specialists who can do their jobs well, the experience of industry surely has shown that heavy specialization is simply built-in obsolescence. What will all these specialists' jobs be in five years? From viewpoint two, emphasis in training programs should rather be on (a) developing an attitude of curiosity, self-propulsion, and flexibility; (b) a search for unifying core principles which can be projected at least a few years forward; and (c) enough specialization, a good deal of it taught through practicums and internship, to do the immediate job well on entry into the world of work.

How might people of these two views regard the middleman? Here the viewpoints seem more in agreement. But viewpoint one sees the middleman as a communication link in a chain, transmitting ideas from one head to another. Viewpoint two would place more emphasis on him as a member of two professions, continually seeking the basic ideas in both and trying to combine them in his own head.

Viewpoint one tends to utilize the basic theoretical concepts of the economist and sociologist. There is a hierarchy here. My liver, I, my department, my faculty, are all systems; and a great deal can be learned about them and their relationships by using general systems theory. Viewpoint two tends to use the basic concepts in the theory of the psychologist and perhaps some of the theory of the anthropologist. Beyond me as a system, there is something about me as an organism which is qualitatively different from my liver as an organ, or from my department as a collection of human organisms. Through the ages, it seems to have been intuitively obvious that the organism is quite different from the organ or from the collection of organisms, although it is true that by thinking of all three as systems we can understand more about them. Still, there is something more than the system.

Other illustrations could be used to indicate the two rather distinct, crystallized viewpoints that were evident throughout our discussions. We seem to have a penchant these days for "good guys" and "bad guys," for free worlds and slave worlds, and in discussing a particular problem, perhaps we sometimes bring these two viewpoints into head-on collision. Anyway, I have had these two viewpoints crashing head-on, scattering the problem in random bits to their diametrically opposed positions. But are these two, the organization-oriented and the organism-oriented, really so opposed? Or might they better be represented as two viewpoints making an oblique angle with the problem? As they converge, if the analogy of the parallelogram of forces is not too strained, the resolution of their forces may succeed in moving the problem a little toward solution. Depending upon our own flexibility, could we as individuals shift our perspective from viewpoint one to viewpoint two or *vice versa* just a little more often, to see how things look from there?

This session was titled, "Where Do We Go From Here?" The conference has not, of course, tried to tell you in fact where we should go from here. The following summary of a summary, however, might provide us with a springboard. I am going to read these four points rather carefully here, because I, and some of my colleagues, considered that they summarized a good deal of the conference:

1. A big gap exists between basic research and implementation, and we have too few trained change agents who can help us bridge the gap. Their selection and training must be given top priority.

2. There is little in the school system to encourage innovation and creativity, either for the researcher or for the classroom teacher. Appropriate rewards and means of encouragement must be found and developed.

3. We must be prepared to use any or all of at least four types of strategies: (a) intellectual — knowledge to replace ignorance; (b) attitudinal — positive attack toward change, and curiosity to overcome apathy; (c) political — use of legislation and regulations to overcome resistance; and (d) introduction of incentives — changes of reward system to favour or encourage change.

4. We must consider the whole school system in all its aspects and build into it a change system leading to changes acceptable under the political and social circumstances of our particular region and country.

APPENDIX A

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Emerging Strategies and Structures for Educational Change. Anniversary Invitational Conference of The Ontario Institute for Studies in Education, June 12-15, 1966. Publications Series, No. 2. $2.00.